IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF ARIZONA
Case No. MC13-08002-PCT-DGC

VIDEOTAPED DEPOSITION OF WILLIAM L. CHENOWETH
VOLUME II
January 16, 2014

In the Matter of Petition of
EL PASO NATURAL GAS COMPANY, L.L.C., a Delaware Limited Liability Corporation,
2 North Nevada Avenue
Colorado Springs, Colorado 80903

to Perpetuate Testimony of

WILLIAM L. CHENOWETH

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John Dunn, Videographer

Pursuant to Notice and the Federal Rules of Civil Procedure, the videotaped deposition of WILLIAM L. CHENOWETH, VOLUME II, called by El Paso Natural Gas Company, was taken on Thursday, January 16, 2014, commencing at 9:09 a.m., at 225 Main Street, Grand Junction, Colorado, before Candice F. Flowers, Certified Shorthand Reporter and Notary Public within and for the State of Colorado.

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VIDEOTAPED DEPOSITION OF WILLIAM L. CHENOWETH VOLUME II

P R O C E E D I N G S

(Exhibits 102 through 121 were marked.)

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VIDEOGRAPHER: Today is January the 16th, and this is the beginning of Tape No. 7 in the deposition of William Chenoweth. The time is approximately 9:09.

WILLIAM L. CHENOWETH,

being previously duly sworn in the above cause, was examined and testified further as follows:

EXAMINATION CONTINUED

BY MR. VOORHEES:

Q Good morning, Mr. Chenoweth.

A Good morning.

Q Thanks for joining us again today. I have placed in front of you our fourth volume of exhibits and I would like to direct your attention to Exhibit No. 102 in that binder.

Do you have that?

A Yes.

Q Okay. For the record, this is a letter -- or actually memorandum, dated August 17, 1953 entitled: Certification of Huskon, H-U-S-K-O-N, No. 5 and Huskon No. 6 Coconino County, Arizona.

Have you seen this document before?

A Huh?

Q Have you seen this document before?

A Yes, this is my -- the C-314 is my writing up here, so this must have -- this must have been a document I got for the Nez Tsosie trial.

Q Okay. And we discussed this yesterday, but it might be useful just to get us back up to date on this.

What is the certification process here that's being discussed in this memo?

A Well, apparently Rare Metals applied for certification for these two properties and they filled out the forms, sent them to the Grand Junction office, got in the -- got in the system. And they sent an examining engineer out to examine it, see if all the paperwork was in order. They had to have a mining permit -- copy of the mining permit, and he walked around the property and saw if their claim corners were in order and all that.

And then they would write a report like this. Gill Ritter was a mining engineer, and he'd write a report recommending it to his boss. And then they would pass this on to the attorneys and they would check it out before it got certified. So this is really a report of the investigation -- a

field investigation of a property to see if it was worthy of certification, and he did recommend it apparently.

Q Okay. And --

A And this was standard procedure. For anything that was certified, they had this field examination, the examining engineer would write a report like this, and it would get in the channels and eventually -- Rare Metals in this case would get audited. They'd say your company has been certified. This is how you apply for the money.

Q Okay. And you mentioned the author of the report, Mr. Gill Ritter. Did you know Mr. Ritter?

A Yeah, very well.

Q All right. Let's turn our attention now to Exhibit No. 103, which -- which is a document dated October 1, 1953, and it's entitled: Amenability Test Report.

I don't know whether you have seen this document before.

A I have never seen this one.

Q Okay. But could you tell us what an amenability test is.

A That's where they take a new discovery like the Cameron area and they run all kinds of

tests on it to see if it's amenable to the existing milling processes.

Q And this is a report of that amenability test?

A This was done by the Bureau of Mines in Salt Lake, because not all -- not all amenabilities were done here in the Grand Junction area at the pilot plant apparently, because I know I've seen -- I've heard of amenabilities being done by the Bureau of Mines office in Tucson, I think, also. But it's just that they went through and tested it with different chemicals what they thought the -- whether it was -- would it be amenable. What circuit it would be -- kind of a circuit it would be amenable to.

Q Okay. Okay. And could you tell us what the Bureau of Mines is within the Department of Interior and how that relates to --

A They had a contract -- the AEC contracted out a lot of this -- a lot of assaying and things like this to the Bureau of Mines. I know if a prospector in southern Arizona found a sample, rather than send it up here, he could take it into Tucson, I think it was, and get it assayed free of charge and the AEC would pay for it. They had

contracts out with the Bureau of Mines to spread out this laboratory work all around the West.

Q So the Atomic Energy Commission employees worked with Bureau of Mines employees?

A No, they were contractors.

Q Okay.

A So there was paperwork with them, and then the AEC got copies of all this material also, but I'm sure that -- because the AEC was paying the Bureau of Mines so much per test to do this work.

Q Okay.

A I don't know the financial, but they were contractors. And you can see in the old records that the Bureau of Mines in Spokane assayed samples from prospectors for the AEC and everything like that, as well as Tucson and Salt Lake, apparently.

Q Okay. Well, let's turn our attention now to Exhibit No. 104, and this document is entitled: El Paso Natural Gas Company, Meeting of the Board of Directors, held on May 25, 1954.

Mr. Chenoweth, I don't suppose you have seen this document before.

A No, I have never seen this.

Q Okay. There's just one aspect of this document that I want to refer you to, which is a

reference on Page 11 of the exhibit -- actually, 10 and 11, with regard to an individual named Mitchell H. Kline, K-L-I-N-E.

Did you know Mr. Kline?

A No, I didn't.

Q Okay. Well --

A I think I met him one time in a meeting in Salt Lake.

Q Oh, that's right.

A We talked about it yesterday, but no, I didn't know him. The most -- the two El Paso officials I had contact with was Mr. Rocci, the mill superintendent, and then the mine superintendent down at Cameron. I can't think of his name right now, but he committed suicide, I know.

Q Okay.

A -- to the company.

Q We're going to -- we're going to come across his name shortly. But I just wanted to --

A McFarlan. I think his name was McFarlan.

Q McFarlan?

A Something like that. Anyway, we...

Q We'll come across his name, I think.

A I'm sure you will.

Q So I did want you to direct your attention

to Mr. Kline here who is introduced as the -- if you look at Page 10 of this exhibit, Mr. Kline was the Chief of the Rare and Precious Metals Branch of the Bureau of Mines. And I think you just testified about the Bureau of Mines.

A Uh-huh. Yeah, I see -- I see that.

Q Okay.

A Now, I don't know anything about the organization of the Bureau of Mines, but apparently he had a background to take over for -- to run the rare metals.

Q Okay. Well, let's now move to Exhibit No. 105, and it's a document that is a letter from Mr. Sheldon P. Wimpfen, W-I-M-P-F-E-N.

Did you know Mr. Wimpfen?

A Yes, sir.

Q Okay. And what was his position?

A He was the manager of the Grand Junction office of the AEC in the, oh, early '50s. I can't remember. He was the manager for maybe eight to ten years during the first uranium boom.

Q Okay.

A But he hired me. He's the one who said -- when they offered me a job and I came up here to sign the papers, he welcomed me to the AEC, so...

Q That's great.

Well, now, Mr. Wimpfen is discussing, in this letter in paragraph three, classified research and development data. Could you read that paragraph three of the letter and just -- I just want to ask you what kind of classified research and development data would the Atomic Energy Commission be dealing with?

A Let's see. I'm reading it, but...

John Chapman, apparently he -- I remember. He was a mining engineer that worked for the AEC and then he left, apparently, and went to work for Rare Metals. And they're asking for his reinstatement. I know that in the early days, some of the millworkers -- the millworkers at various mills on the Colorado Plateau, like -- I think it was Durango -- they had Q clearances also and mainly because they were handling the end product, the yellowcake. But this is something I saw in the records, that there were Q clearances for VCA millworkers at Durango, and I assume that's what they're talking about. If they build a mill, there would have to be Q clearances, maybe, for those workers or something.

Q So a security clearance would be necessary

when you're building a mill --

A Not building it, but running it.

Q Running it. I see. Running the mill for purposes of satisfying --

A That is something I really can't comment on it because I have only seen one piece of paper years ago where -- and we were all surprised that millworkers had Q clearances. This particular mill did at Durango, I think.

Q And what is a Q clearance? Is that high-level security?

A It's a high clear --

THE DEPONENT: Do you know?

Q (By Mr. Voorhees) Okay. Well --

A I know when I worked for Walker-Lybarger, I had the L clearance, but a Q clearance is a higher level, and I think there's probably one above that.

Q Okay. And -- and I guess this also prompts a question about people that were working for the Atomic Energy Commission. Did you know any of those individuals who had worked on the Manhattan Project?

A Yes. There was Bob Nininger, our big boss, our No. 2 boss in Washington, had worked -- well, he was a young lieutenant and he was on the

Manhattan Project. And then there was one -- there were two ladies -- I can't remember --

Q Can we --

A Karen Schaefer and somebody else.

Q Can we spell that Ninin -- is that Nininger, N-I-N-I-N-G-E-R?

A Yeah.

Q Okay. That's -- we referred to him yesterday.

A Right. And there was a Mrs. Schaefer that transferred -- there was a secretary here in Phil Leahy's office and another lady -- I can't remember her name -- they transferred over to the AEC in 1947. And then there was a tall man, tall bookkeeper, that was 4F he said, and he transferred over to AEC.

So I remember three people down there at the compound that had worked for the Manhattan District here in the Colorado Engineers Office, and they all had little pins, these little pins with A's on them, we built the atomic bomb. But I can't remember their names, but I remember the three people that transferred over. And there might have been more, but I remember there were two secretaries and one bookkeeper.

Q Okay.

A Somebody asked him how come you weren't in the war and he said I was 4F.

Q Okay. Well, let's go to 106 now, and we don't have to linger long on this. This is just a biography of Mr. Mitchell H. Kline and -- discussing his background. And the part that I wanted to focus on, just briefly, was at the very end of this article in the Salt Lake Tribune, dated Sunday, November 14, 1954, is the reference to Mr. Kline's being 14 years with the Bureau of Mines.

Do you see that?

A I'm looking -- educated...

Q Yeah. It's right -- the last paragraph of the article.

A Uh-huh. Yeah, I see that.

Q Okay. Well, now, let's go to the next exhibit, 107. This exhibit is not dated. It's entitled: Evaluation of Rare Metals Corporation Properties of the Cameron, Arizona Area.

And while it's not dated, on the last page of the exhibit, I want to direct your attention to Page 6. It is referencing information in the appendix as of December 31st, 1955. Do you see that?

A Page?
Q The last page --
A Page 6?
Q Yeah.
A Yeah, I see it.
Q Okay. So we're assuming that this is contemporaneous with that date. And I want to ask you a couple questions about this document.
A Oh, I see.
Q Have you seen this before?
A No.
Q Okay. Then just a couple questions with regard to the individuals that are mentioned in this document.

Do you see in the first paragraph a reference to Mr. Kline?
A Back to first...
Q Yeah, first paragraph on Page 1.
A Okay. First paragraph. McKinney. McKinney is the man that I knew at Cameron that committed suicide.
Q Okay. That's what I was going to get to next.
A Yeah, I couldn't remember the name, but that's right. McKinney. He was the superintendent.

Q A. A. McKinney, M-C, capital K-I-N-N-E-Y.

And who is that next person, Mr. H. W. Horst, H-O-R-S-T? Exploration --

A I remember that name, but I can't put a job or anything with him. I think -- I know he didn't live in Cameron like McKinney did. McKinney had a trailer down in Cameron where he lived. Horst must have come down from Salt Lake or something, because I -- I would have to look in my old field notes, if I have him in my notes, but that seems kind of familiar.

Q Okay. Do you -- do you know whether this document was written by the government?

A I doubt it, because this last page, Page 6, you know, what it is is they're figuring out on the Circular 6 bonus how much money they have collected and how much money remains to be collected. Like they're saying, Huskon 1 is all paid out, Huskon 3 is all paid out, but Huskon 2, there's still 1,993 pounds at 3.50 a pound, and that would be $6,000 -- that much dollars remains to be collected on the bonus payments.

Q So --

A This is -- to me, this is a tabulation of remaining pounds of uranium eligible for the bonus.

Q Very good. Okay. Let's go to Exhibit No. 108. This is a memo from Rare Metals Corporation of America, dated December the 6th, 1954, and I take it you have not seen this one before. I have just a question or two about this. It also involves security clearances. There's a reference to Mr. Wimpfen in his letter of December the 3rd with an agreement.

Could you read this for us. I'm just interested in the information with -- regarding security clearances in the second paragraph.

A I have never seen that before.

Q Now, apparently in the memorandum there's a requirement for the company to sign the agreement before it gets security clearance.

Do you see that?

A Yeah, it looks like that, yeah. That must be the security clearance for millworkers that we mentioned earlier that I'd heard about.

Q Okay. All right. Let's turn to 109. This is a letter dated January 19, 1955, and the two individuals at the top of the page, Mr. Virgil Rittmann -- and that's R-I-T-T-M-A-N-N -- did you know Mr. Rittmann? I apologize again. This is sort of a memory test. I know you haven't seen this

document before.

A No.

Q But there's Mr. Virgil Rittmann at the top of the page and Mr. R. J. Crowley.

A No, I've never heard of those names.

Q Okay. How about on the second page, Mr. E. J. Carlson?

A No.

Q Okay. All right.

A We had his name come up yesterday and I don't recall that either.

Q Okay. Let's go to Document 110, and this is, for the record, a letter dated February 3, 1955, and we won't spend much time on this because this is probably another letter that you haven't seen before.

A No.

Q Okay.

A No. Stearns-Roger was known in the industry because they were one of the companies that built many of uranium mills in the early '50s.

Q Okay.

A In fact, they built -- they built the mill down here where the AEC compound is and they built the Manhattan District mill for them. So they have

a long history of building uranium processing plant.

Q And apparently, according to the first paragraph of this letter, the Rare Metals Corporation is negotiating the construction of a mill with the Atomic Energy Commission. And it appears that Stearns-Roger Manufacturing Company -- and that's S-T-E-A-R-N-S -- is going to be the construction contractor, and these are terms of the construction contract that is going to be required for purposes of the building of the mill.

And I want to direct your attention to Page 2, this little subparagraph L, where it says in discussing what's going to be built, quote, Other units that may be required by the Atomic Energy Commission or Rare Metals Corporation. Do you see that there?

A I have no idea what that refers to.

Q Okay. Well, certainly there are requirements of the Atomic Energy Commission with regard to building mills. Would you agree with me on that?

A Yes.

Q Okay. Okay. Let's go to Exhibit No. 111, and this -- again, I will preface this question with you probably haven't seen this document before. And

I just want to direct your attention to the first paragraph.

It's a document entitled: Rare Metals Corporation of America, March 4, 1955. And it appears that this letter is directed to the attention of Mr. Wimpfen.

A Uh-huh.

Q And it appears that it's from Mr. Kline, and it sets forth the basic terms of the construction of the 200 per day capacity uranium mill at a 240-acre site at Tuba City.

Do you see that in the first paragraph? Do you see that in the first paragraph, that it's referring to the construction of the mill?

A Yeah. I think it's very interesting that he's talking about water resources here on the first page.

Q Okay. Well, that's interesting, and I also want to point your attention to this requirement that is addressed in paragraph two with -- and I'm going to read this into the record. Quote, You may be interested to know that as a result of its extensive exploration program on the Navajo Indian Reservation, Rare Metals has presently available an adequate source of ore to supply 50

percent of the feed for a 200-ton mill for a five-year period.

Was that a requirement that the -- that the --

A Oh, yeah. You couldn't build a mill if you couldn't justify where your mill feed was coming from. And the AEC got two or three prop -- I have heard about this. This is just hearsay, but that various companies would submit a mill and they'd say, Well, we'll find ore later. And the AEC says, No way are we going to -- are we going to talk to you people.

Q Okay. That's -- that's fine.

Now, let's go to Exhibit No. 112. And, again, we're discussing the construction of the mill in this -- in this piece of correspondence here. And I just want to direct your attention, again, to the introduction of this document dated May 10, 1955, and it appears to be from Mr. C. L. Perkins. And it also appears that there's some negotiation going on between four people from the AEC that are identified as Mr. Sheldon Wimpfen, Ed Crabtree, P. Martin, and K. Bursom, B-U-R-S-O-M.

Were all those individuals employed by the Atomic Energy Commission?

A Yeah.

Q Okay. And it appears that right below that representing Rare Metals were four individuals: Mr. Perkins, Mr. Crowley, spelled C-R-O-W-L-E-Y, Mr. Kline, and Mr. J. M. Evans.

Okay. No. 113. Now, on this document, it appears to be a contract.

A Yeah.

Q Have you seen this before?

A No. But I recognize that number up there. That's a contract issued by the Grand Junction office, because the AT is atomic energy, 05 is Colorado, 1 is the Grand Junction office. So it's Grand Junction contract 293.

Q Dated July 15, 1955.

A And this is probably -- if you go to the Albrethsen McGinley report, I'm sure that number is referred to in that report.

Q All right.

MR. VOORHEES: Oh, yeah. Who just joined us?

MS. RONGONE: Oh, hi. It's Marie Rongone. I just didn't want to interrupt --

MR. VOORHEES: Oh, that's okay, Marie. Welcome. Good morning.

MS. RONGONE: Welcome. Good morning. Thank you.

MR. VOORHEES: Okay. We're on -- we're wrapping up our fourth binder here, Exhibit No. 113.

Q (By Mr. Voorhees) There's a requirement on Page 2 of the contract for weighing, sampling, and assaying. And I just wanted to ask you again, Mr. Chenoweth, I know we talked about this yesterday, but the equipment for weighing, sampling, and assaying, who owned that equipment?

A Who did it?

Q Who did the -- yeah, who actually did the weighing, sampling, and assaying?

A Rare Metals employees.

Q Employees. And --

A The trucks would come in loaded with ore and be weighed, and then they would dump the ore where they were told to dump it, and then they'd go back and weigh the empty truck. And that way they established the wet tons of ore coming to the mill.

Q Okay.

A And then they'd do a chemical analysis and get the dry tons. They'd remove the moisture. The AEC didn't want to pay for the moisture in the ore.

Q Okay.

A And I see back here in the front that -- someplace there's something interesting, I thought, about the ore-buying station. They were going to build an ore-buying station and lease it to the AEC. And the McGinley report talks about the ore-buying station being operated by the AEC. Well, this would be the same thing they're talking about here.

Q Okay.

A Rare Metals bought it, built it, and leased it to them. That was in one of these documents I was just looking at.

Q Okay. Well, now, if we -- if we -- if we look over at Page 28 of this exhibit.

A Okay.

Q I just want to highlight this for your attention where it says "Security."

A Oh, yeah.

Q Contractors do need to safeguard restricted data and other classified information.

Once -- once a contractor had that security clearance, I take it the contractor had a duty to safeguard the restricted and other classified information. Would you agree with me on that?

A Yeah. That's probably the AEC didn't want it being talked about how much uranium was being produced every day and all that kind of stuff for national security.

Q Okay. And this leads us right into the next exhibit, No. 114, in which there's a letter dated November 23rd, 1959, and this is -- is a letter -- I don't know whether you have seen this before or not.

A No.

Q But it refers in the first paragraph to Rare Metals responding to a request for information that it has received from the Atomic Energy Commission. And it is providing an outline of the organization of Rare Metals for the AEC. And we see Mr. Perkins is the president. We've seen his name before. Mr. Kline is the vice president.

And then there's a name there that you mentioned just a little bit ago, Sidney Runke R-U-N-K-E, and other individuals. Do you recognize any of those names or any of those individuals?

A I knew -- I met -- I knew Mr. Runke, used to contact him quite frequently.

Q Okay. All right. Then let's go to No. 116, please. And have you seen this letter before?

A No.
Q Okay.
A This come out of the Washington office.
Q All right. And I take it the subject of the letter is wastes that are at the mill.
A Yeah, that's what it looks like, yeah, where to put the tailings.
Q Okay. My colleague is going to go over the tailings with you at the mill, I believe.
So let's go to 116. And, again, this is another status report exhibit. Let's, for the record, identify this as a document from the Arizona State Department of Health entitled: Status Report, Tailings Pile Situation, dated November 1965, and it's prepared by Mr. Wilfred C. Gilbert.
Do you know him?
A No.
Q Okay. There's a reference here. It's directed to the tailings pile situation where there's an estimated 600,000 to 700,000 tons of tailing at the -- I think they are referring to the Tuba City mill.
Did you ever see that pile of tailings?
A Oh, yeah. You could drive by. It was quite impressive.

Q Okay. No. 117 --
A Oh, yeah.
Q -- is another piece of correspondence dated March 25th, 1968 from the United States Department of Interior, Bureau of Mines, to Mr. W. T. Hollis, H-O-L-L-I-S, who was the manager of the mining division of El Paso Natural Gas.
Have you seen this letter before?
A No.
Q Okay.
A No.
Q And I'm wondering, it's signed by Mr. Richard Havens. I don't know whether you knew him or not.
A No.
Q Okay. Also referring to the tailings at Tuba City.
A Uh-huh.
Q All right. No. 118. Again, it's another letter, dated April 22nd, 1968 to Mr. Hollis.
Have you ever seen this letter before?
A No, I have never seen that before.
Q No. 119 is a correspondence from the State of Arizona, dated July 19, 1968. I believe the subject matter of this letter, again, is mill

tailings.

And I'm wondering: Have you seen this letter before? It's from Mr. Wilfred C. Gilbert. Does this letter -- do you recognize this --

A Never seen this before.

Q Okay. Now, the next document is No. 120. It's, again, another letter, dated October 17, 1968, with regard to the mill at Tuba City, Arizona. And, again, it's to Mr. Hollis.

I take it you haven't seen this letter.

A No.

Q Okay. Now, finally, my last exhibit here in this volume is Exhibit No. 121, and there is some information and you see it. This is a very lengthy exhibit, and I apologize at the outset for that. But we took a look at this at the break, and this is an environmental report entitled: Preliminary Assessment, Section 9 Lease Abandoned Uranium Mine, Coconino County, Arizona, November 12 -- I'm sorry -- November 2012.

And I'm just going to direct your attention to one document. I think we have it tabbed there.

A You mean this yellow tab?

Q Yeah.

A Okay, sure.

Q Let's take a look at that just briefly, because I'm going to turn this over to Mr. Neumann. But what is that -- and could you read out the page number.

A It's page -- it's facing Page 581, so I guess it's 582. Yeah. There's no number here, but it's 583 on the back.

Q Okay. Right.

A So it's 582.

Q Right. There you are. And what is that document?

A This is -- this is a map prepared by Arizona Geological Survey, Robert Scarborough, that goes with his report, which I think you've got copied -- anyway, with his big report we talked about yesterday. And he took -- he took the AEC open-file map of mine and Magleby and he had it redrawn and he added all the known uranium occurrences, not just the mines, but anyplace uranium -- like some Navajo prospectors or anybody else had reported and he plotted these on this map. And he lists all these mines and occurrences alphabetically down here, and this was accompanying his open-file report on everything you need to know

about Arizona.

And then when they decided to work on my narrative of the mining era, my open file report, they decided to use -- they used this map as my Plate 1. And so this says Plate 1. This is a map, I'm sure, accompanies my report as well as Scarborough's report.

Q Okay.

A Because he says down here the base map is from the -- from Chenoweth and Magleby's map.

Q All right. Well, thank you.

A And the difference between it and the original AEC open-file map is it has all these occurrences, which I didn't like, but since it was their report, I had to go along with it, because...

MR. VOORHEES: Okay. Let's take just a quick break here.

VIDEOGRAPHER: The time is approximately 9:47, and we are off the record.

(Off the record.)

(Exhibit 122 was marked.)

VIDEOGRAPHER: The time is approximately -- excuse me -- it's 9:50, and we're on the record.

Q (By Mr. Voorhees) So, Mr. Chenoweth, we

have just marked for identifications as Exhibit No. 122 the map of southwestern Colorado that you used yesterday to depict the locations of the studies that you conducted.

A Oh, yeah.

Q And so that is No. 122. I don't have any additional questions with regard to that exhibit or Volume No. 4.

MR. VOORHEES: And at this point, I want to thank you for all your responses and turn it over to my colleague, Mr. Neumann.

EXAMINATION

BY MR. NEUMANN:

Q Good morning, Mr. Chenoweth.

A Good morning, Chris.

Q I'd like to start by asking you if you could share with me a definition of the word "prospect." What does it mean to you?

A Prospect?

Q Yes, prospect.

A Prospect to me means it's a place where somebody has gone out and maybe disturbed the earth a little bit looking for minerals. It doesn't have to be economic. It's just if they found an occurrence of a mineral or...

Q And is that term --

A It's something that never turned into a mine. I would say a prospect is something that they found something there, but it wasn't economic enough to remove and it didn't become a mine.

Q And that term, is it also sometimes used as a verb, to prospect for ore?

A Yes.

Q And in the context of that use as a verb, let me read you a definition that the State of Colorado, for example, uses.

A Okay.

Q I just want to see if it's consistent with your understanding.

Prospecting means the act of searching for or investigating a mineral deposit. Prospecting includes, but is not limited to, sinking shafts, tunneling, drilling core and bore holes, and digging pits or cuts and other works for the purpose of extracting samples prior to the commencement of development or extraction operations and the building of roads, access ways, and other facilities related to such work.

A Yeah. That's a good definition, because you actually can sink a shaft to prospect. If

you're starting to remove material, it becomes a mine, in my mind it would be, the way I think about it.

Q Okay. And now I would like to go back to an exhibit we looked at yesterday, which is the O'Rear report, and that's Exhibit 77.

A Which one?

Q It is Exhibit 77.

A 77. Oh, okay. I see that.

Q And I would like to look at Page 15 of that exhibit.

A Page 15. Oh.

Q Are you there?

A Yep.

Q Okay. So this is -- looks like Page 7 of the O'Rear report.

A Yes, uh-huh.

Q Okay. And you see there that there's a discussion of additional stimulants by AEC to encourage mining. Does that look right?

A Yes.

Q Yes. And the first one discussed at the bottom of the page is ore-buying stations.

A Uh-huh.

Q And on the third line they mention that

these are government-operated ore-buying stations. Is that consistent with your understanding? Did the government operate the ore-buying stations?

A Yeah. That would be -- that would be the ore-buying stations that were operated by AEC contractor personnel. AEC people never operated the ore-buying stations. It was only contractors like Walker-Lybarger and Lucius Pitkin and that group. But these were the ore-buying -- these were the places -- the government put in a place where the miners could sell the ore where there was no other available market. It was the private market to stimulate getting the uranium out.

Q And do you know what kind of activities these contractors performed at the ore-buying stations?

A Oh, yeah. They had -- they had a scale. They'd weigh the trucks in, dump the ore, and then weigh the trucks empty so they'd get a wet tons -- number of wet tons. And then they'd usually have -- they had a little lab at an ore-buying station where they'd do a moisture calculation to see how many dry tons they had. And then some of the labs actually made a preliminary radiometric -- oh, no. I'm getting ahead.

They had a crusher. They'd run this ore through a crusher and they'd take a sample, and then they'd do the moisture calculation, I know. And some of the bigger stations had their own radiometric scanners and they'd get an idea of what the uranium content was. But most of the time, they'd take a sample and send it up to Grand Junction here at the big lab to have it analyzed here for uranium, vanadium, and calcium carbonate.

And eventually they'd make a -- then they'd take the ore after it was crushed and they'd stockpile it someplace and market all that with -- and when ore-buying stations closed, those stockpiles were put up for competitive bid to see which mill would buy them. And a lot of times -- I know the ore-buying station in Globe, Arizona that I'm real familiar with, when they shut that down, they had these various stockpiles around based on the different kinds of ore.

They had ore from California and Arizona and even Nevada down there. And they put it up for bid and people came down and looked at it. And Kerr-McGee bid on a few stockpiles and Homestake on one and Tuba City on another stockpile. So the AEC did get some of their money back, because at the

ore-buying -- I missed -- the ore-buying stations, the miners were paid directly by the AEC. There was no mill involved.

And -- but the big ore-buying stations did have their own lab, I understand. But they always relied on the chem lab here in Grand Junction for the final analysis of what that particular load did and...

Q Are you familiar -- are you familiar with the Tuba City ore-buying station?

A No. That was all -- by the time I got to Flagstaff, Rare Metals had taken over all the ore-buying facilities at that mill. Because it says back -- that they would lease the ore-buying station to the AEC, and then when it was completed, Rare Metals would take over the operation. And that all happened before I came to Arizona.

Q Okay. Let's turn to the next page, Page 16, of Exhibit 77. And do you see that the next heading under the list of additional stimulants is the government exploration program?

A Yes.

Q And we discussed that yesterday in reference to several exhibits, right?

A Uh-huh.

Q There's mention in the first paragraph that AEC was assisted by the Geological Survey of the Department of Interior.

A Uh-huh.

Q So USGS?

A Yes. They had some kind of open-end memorandum of understanding for the USGS to assist in this effort in the beginning, and they reimbursed the USGS for quite a bit of money for these projects they were on.

Q And are you aware, does the USGS have a set of reports or other documents relating to this program?

A Yeah. They wrote lots of reports. Mainly they were called TEIs, trace elements investigations, and TEMs, trace elements memorandum. And these were usually -- these were classified for many years, and then they were all usually declassified, and the library of the USGS in Denver at the Federal Center has all of these, has a complete set of TEIs and TEMs. There are quite a few here in the Colorado Mesa University library that we had down at the compound, down at the site here, and a lot of that material was transferred to what's now Colorado Mesa University.

Q And before I forget, this O'Rear report itself, it goes by TM-187.

A That's a technical memorandum. That's an AEC -- that's an AEC prefix.

Q And yesterday we saw another technical memorandum, No. 11, that related to some rim-stripping.

A Yeah, right.

Q And is there a set somewhere of all of the technical memoranda?

A The best set I know of is at the Colorado Mesa University, because they were -- these were issued by this office. TMs were usually internal memos, but they open-filed a lot of them because of FOIA. And in 1984, the decision was made to transfer the DOE library down at the facility here to Mesa State College, and they finally got it all cataloged up there on the third floor. And that would probably be the best source of where the TMs are, as well as the RMEs and RMOs.

Q Okay.

A Which were all AEC prefix -- prefix reports.

Q And back to Page 16 where we were reading about the exploration program, the first paragraph

mentions USGS assigned more than 100 geologists and other experts to work with AEC in searching for uranium deposits.

Do you have a sense, at its peak, how many total AEC and USGS personnel worked on exploration --

A No. I know that when the AEC -- well, in 1983, they made a survey of all the federal employees that had ever worked for the office down here, but that was engineers, secretaries, metallurgy and all that, and I think there were 500-and-some people from 1947 to 1983 that passed through the office as federal employees. But I can't tell you how many actually worked on exploration.

USGS, it was several hundred. They had a whole building down there on the site which was USGS people. And they were given areas to do the drilling, so they had expertise in the drilling, and AEC didn't have that at the beginning. And then they had -- they did a geologic studies in different areas.

Q When you say "the site," you mean somewhere in Cameron at a camp or the Grand Junction --

A Oh, a site would be like, say, well, we want to -- we're going to drill this area around Gateway, Colorado, and there would be a map and tell you that's your project here. And then they would give them a reconnaissance, and they did a lot of work in Monument Valley and in the Carrizos but not the Lukachukais or Cameron, to my knowledge. They did come into Cameron later and did geologic mapping, detailed mapping, of the area and studying the stratigraphy and sampling the water wells, but they did not do concentrated studies like they did in -- like they did around southwestern Colorado.

Q The next page, Page 17, there's a category drilling.

A Uh-huh.

Q And the first sentence starts out: In 1948 to 1956, the AEC and the USGS drilled a total of 5,575,000 feet of exploratory and development holes.

And that's a fairly big number, it seems.

A Yeah. But this doesn't include just the Four Corners states. This goes to South Dakota, Wyoming -- where else did they drill?

Q So --

A Anyway, most the drilling, I would say, was in the Four Corners states, and there was quite a bit, though, in Wyoming and South Dakota.

Q Can you walk me through when -- were you ever at a site where drilling occurred?

A I worked on a drilling project there in the Northwest Carrizos for about two years.

Q And can you tell me -- I think you mentioned there's a little bit of site preparation that goes on before you actually drill.

A Yeah. Well, first of all, the geologists have got to determine, you know, is this area favorable. And that area I worked on, well, yes, these rocks with uranium in them are dipping down under the sand area, and we thought we could drill out here and find continuation of some of these orebodies.

So they let a contract -- put out here a contract saying we are going to drill so many holes, so many feet in this area and without giving much of -- they gave a location and all that, but they didn't give much geology. And the drilling companies had to come out and look at the area and bid on it. And once it was bid, the AEC would prepare -- would state drill-hole locations based on

where they thought the better place to drill was, based on the known trends.

And we put posts in the ground, and the surveyor would survey these. And eventually they'd send bulldozers out to level it out because that was part of what the AEC did. All the drilling companies had to go out there and do the drilling, and they usually bid so much a foot. And it would say what the drilling company had to do and what the AEC had to do about handling the samples.

Usually the drilling company would lay the sample -- if it was core drilling, they would put the samples in core boxes and lay them out there for the AEC to examine. If it was dry drilling, they would lay the samples on the ground for the ACE to examine. And then the AEC geologist would make -- they had a log and they'd make a geological log of that hole based on what they saw in the samples. And then they would send a gamma ray truck out and that would drop a radiation detector down the hole and it would be pulled up and it'd make a graph showing any radiation detected in that drill hole so you'd know where to go back and do any sampling.

Q And what would the AEC or the contractors do with the cores after they were logged?

A The core was given over to the AEC. They'd take it back to the geology office and study it in detail, and if we had any -- found any -- and scan it with a Geiger counter. If we found any mineralization, we'd sample that, send it in to Grand Junction to get an assay of it.

Q I think I have seen pictures with cores just lying on the ground, though.

A Yeah. And then what happened was the core -- and sometimes they'd say, Well, we want to save some of this core for geologic investigation and sometimes, No, we'll just dump it on the ground. And -- and I know in one of our projects, we had core -- these wooden core boxes of core, and they said, No, we're not going to save it; we're going to dump it in the ground. And we told our local Navajo neighbors, You can have these core boxes if you dump it, and they came up and dumped all the core for us to get the wood out of the core boxes.

Q So sometimes the cores were dumped --

A Were saved for future study, but I'd say 90 percent of the time they weren't.

Q Okay. And can you explain to me how deep were the ore deposits you were typically exploring?

A Well, some -- some of these in the Carrizo

Mountains I worked on, they were about 90 feet deep. But in the Lukachukais, because the mountains -- the mountains come up like this and you go back from the rim, you have to go higher, some of those holes were nearly 1,000 feet deep. So it depended on the topography. We dug a few deep holes in the Lukis just for geologic information.

Q And I understand that typically the deposits would be in a lens --

A Yeah. Like our boss, he was giving a talk one time and he says, Looking for uranium, it's not bedded like coal, it's like a chocolate chip cookie. The chocolate chips are the uranium deposits in the sandstone bed, because it's very spotty. But you can get elongated trends based on the river system, because most of these deposits are in sandstone deposited by ancient river systems, and they do have -- you can figure out trends in these river systems and know where to drill. And that's what we were trying to do.

Q And one last question before we take a break to change the tape.

I've read in some of the reports a discussion of -- that the deposits would often have a halo.

A A halo?
Q Yes. Can you explain that?
A Yeah. Some of these deposits got kind of oxidized and some of the uranium minerals kind of went out in a -- got -- like groundwater, got kind of moved a little bit and had a low-grade material around them. That would be the halo.
Q Why don't we --
A By oxidation.
MR. NEUMANN: Why don't we take a break to change the tape.
VIDEOGRAPHER: The time is approximately 10:09. This is the end of Tape No. 7 in the deposition of William Chenoweth. We're going off the record to change tapes. Thank you.
(Recess taken.)
VIDEOGRAPHER: We're -- I'm sorry. The time is approximately 10:15, and this is the beginning of Tape No. 8 in the deposition of Mr. William Chenoweth. We're on the record.
Q (By Mr. Neumann) Mr. Chenoweth, we were just discussing the nature of ore deposits and that they often appear in a lens and sometimes with a halo.
And the next question I have is: You had

mentioned, I think in connection with describing the halo, that sometimes lower concentrations were seen as you went further away from the ore. And were lower concentrations like that found in the underlying or -- underlying layers or the layer above? I mean, did it -- was there uranium in the other layers near the deposit?

A Mainly -- mainly it would be in the same layer, but depending on the way the groundwater moved, it would be where the groundwater moved this halo. It can be above, but most of it would be in the same layer because these sandstone beds, you know, go from anyplace from 5 feet to 10 feet thick and in between -- mounted on the top and the bottom by impervious clay beds, so the uranium tends to move within that sandstone bed.

Q And in several of the reports we read yesterday, there was discussion of drilling on a 200-foot grid initially, and then as deposits were identified, arrowing the grid.

A Yeah, about 50 feet, yeah.

Q And so you mentioned before drilling, bulldozers were used to make a flat area?

A Yeah.

Q So --

A That was -- in the drilling contracts, it usually said the AEC will prepare the site. The drilling company didn't have to, so...

Q So some of the reports yesterday had several hundred holes drilled.

A Oh, yeah.

Q When those -- when that drilling occurred, would there be drill pads created with a flat area?

A No. It would be -- it would be -- well, in the Lukis, it was very rugged topography, and so they'd really level out an area and also build an access road so the drillers could get their rigs in there. And then after the drilling, at that time there was no evidence of any reclamation.

And I know in the Lukis, the local Navajos were glad to see all these roads built because there would be nothing to get wood -- haul -- they could haul wood down. It made wood-hauling more accessible to them, because they'd knock over trees and things building these roads in a highly -- we'll look at some pictures. The Lukis were really a highly wooded area. They would knock down some trees for these drill roads, and the locals could get that for firewood. And they really liked our drill roads up there because they made access to

firewood.

But in -- on Cove Mesa, it was just kind of all sagebrush, and they'd knock all that down because that's a level place for a drill, but -- and not a big area. In some of those pictures I have, you can just see they kind of knocked some weeds and small brush down to build that are. But there was no thought of reclamation in that, which there is now. You can't go out and just drill like that now. You've got to reclaim the sites.

Q Yesterday we looked at a report that you prepared summarizing the access -- I think there were five projects building access roads in Arizona. Do you remember that report?

A Oh, yeah. That was -- that was really improving old county roads and building -- and improving the Navajo route from Shiprock over to Kayenta and the Navajo route from Red Rock up to Beclabito.

Q And those roads --

A B -- Beclabito I'm trying to spell. B-E-C-L-A-B-I-T-O.

Q And those roads --

A Those were just kind of Indian -- I mean, they were BIA roads, but they were not paved or

anything. Real rough.

Q And those roads are different than the --

A Drill roads.

Q -- drill roads.

A These would be highways and known trails. We didn't go out and just build new highways through that country. They did build little -- I know they improved the road up on some of the mesas, down here in Gateway, but they were existing roads there.

Q So in connection with each of the AEC drilling programs we looked at yesterday --

A Yeah.

Q -- Cove Mesa and some of the others, AEC would build drill roads to access the sites where the drilling --

A Yeah, right, right. That was -- no place did the drilling company ever have to do that, because in these contracts it said exactly what the drilling company was going to do and provide. And they had to provide samples to the AEC. In some contracts, in other ones, they said the AEC will provide their samplers. It all varied from contract to contract, as far as I know. Because I think I worked on four different contracts, and each one was a little different, what the drillers would provide.

Q Would AEC use bulldozers to build those drill roads?

A Yeah, and the bulldozer was operated by Walker-Lybarger -- by contractor personnel, mainly Walker-Lybarger people.

Q Would the roads typically be made with just one pass with the bucket?

A Yeah, just one big pass. They weren't going to tear up the whole countryside, you know.

Q So the bucket on bulldozers might --

A Yeah, just pushed it aside so a drill rig could back into the site or something.

Q It might have been 10 or 15 feet wide?

A Yeah. It was in those pictures. I got a picture of the Rattlesnake 4 project where you can kind of see where they pushed the sand aside to make a place for the drill rig to sit.

Q And did you ever encounter -- well, let me ask: Did AEC or its contractors ever walk the surface with a Geiger counter at these areas?

A You mean before they were bulldozing?

Q Yeah.

A No, because the uranium was usually, you know, at least 50 feet deep or something, not on the surface. But they would -- on the rim, if it was on

a canyon rim, there was a lot of that rim walking done. That's how they usually -- the new geologists got that tough job to walk along the rim with a Geiger counter and map things like that, and then we'd drill behind the rims in places. But that's the only thing we ever -- where they actually got out and walked with radiation detection equipment on the outcrops of the rock, was on canyon rims. And that was usually to see if there was anything there that the company people had missed.

MR. NEUMANN: Who just joined on the phone? Do you want to -- can you ask?

THE REPORTER: Who just -- who just joined on the phone?

MR. MILLER: It's Steve Miller.

Q (By Mr. Neumann) And you mentioned the rim-stripping just now, and that work was also done with bulldozers?

A Yeah, that was done with -- bulldozers were operated by AEC contractors.

Q And where would the material, the overburden, be pushed with the bulldozers?

A Just pushed a ways out of the way. If -- it was a little hill here in Cameron. In the badlands out there, in the painted desert, you know,

they'd just push that away, aside, and try to get a fresh face to sample -- so the geologist could sample the uranium to see if -- how -- grade it was.

Q And did the bulldozers sometimes scrape a little bit of the deposit as well?

A Oh, yeah. I know in Cameron it would be all weathered and probably some clay from above that slumped down over it, so it made it fresh, and so it did push -- it did push some stuff off to clean it off. There would be some radioactivity in the debris being pushed away, yeah, you're right.

But one thing you've got to know, back in the '50s, you know, it happened, nobody gave a hoot about reclamation ever. Mining or exploration, you know, you could go out here and dig a big bulldozer pit and walk away and leave it, and nobody ever said anything. There was no thing ever concerned about reclamation in those days.

Q Okay. Let's turn now to Page 18 of Exhibit 77, and there's a section entitled: Geologic Investigations.

A Uh-huh.

Q The report mentions between 1948 and 1958, AEC geologists and mining engineers made over 7,500 preliminary examinations of radioactive occurrences.

Can you describe these? Are these the -- were these materials summarized in one of our reports yesterday?

A Well, what the document was yesterday was a report on a series of these preliminary reconnaissance in Coconino County. But like it says, that was a special project that AEC had to publish these things and they didn't have enough money to continue it, so they only got Arizona and Texas done. But these are -- all these PRRs were microfilmed -- put on microfiche, and they were sold by the Office of Technical Services, Department of Commerce, and I don't know where they are today.

Q What -- what activities were included in these geologic investigations?

A Oh. This would be going out -- you know, we were told if any prospector comes in and says, I found some uranium. Can you come out and help evaluate it for me, we were to do that. So we would go out with this prospector and make a road log how to find it and how to make a little -- I know I used to make a little sketch of what I saw and where I sampled and then take the samples back and have the AEC lab assay them and then send the prospector his result, because this is part of the service that AEC

provided to get people looking for uranium. And that would be the main geologic investigation for PRRs.

Other ones would be taking some -- the drill-hole data and looking where the sand -- where the sand body contained the uranium, where -- if you could trace it, you know. But out here there would be no sand, over here might not be sand, and right in the middle here would be a sandstone body that had elongation, and that would be the place to drill.

So we did geologic studies on a lot of the early drilling. So we did subsurface geologic studies like that, as well as surface studies. Like when the Lukachukais were first found by these two Navajos, they had lots of guys in there doing rim walking, just walking along the rims mapping where they found radioactivity, and that was used to do a lot of the drilling projects.

Q So aside from the special project report yesterday on occurrences in Coconino County, is there one location I could find these 7,500 preliminary examinations or whatever documents are related to those?

A I don't know anymore where you could find

these 7,500 reports. I know they were done all over the West, and there was even some uranium in Texas and in New Jersey and all that. There used to be a sheet of paper showing where you could order these county by county and -- from some clearing house for technical information in the Department of Commerce or something like that. And I don't think -- I don't know how you could get it anymore.

The hard paper copies used to be -- the USGS used to have a set of hard paper copies over in the Federal Center, but I think they put them in a warehouse. I don't know if I can find them anymore. And the AEC here had a complete set of the Western U.S. states, and I think they gave -- they were going to give them to the Mesa College, but they didn't want them, because they were in boxes. They were in lots of these boxes, dozens of these boxes full of them. And I think they were going to give them to the museum here in town, but I don't know if they took them or not. It's kind of a mystery to me what happened to all the preliminary reconnaissance reports here in, say, Colorado and Arizona.

Now, New Mex -- Arizona, I think, has a complete set of theirs. They hung on to theirs somehow. And I think New Mexico might. But maybe

even Colorado -- the State surveyor in Colorado does, but...

Q Okay.

A It's kind of a mystery where these are today.

Q The next section is on airborne surveys, but we covered that yesterday.

So why don't we move on to -- at the bottom of Page 19, there's a category called Geophysical Research, and this seems to describe AEC developing equipment or techniques or methods to study --

A Yeah. They -- they -- even back on the Manhattan Project, they were trying to develop down hole -- where they could lower a radiation detector down a hole and pull it up and make some kind of a record of it. And the AEC inherited that and they developed Jeep-mounted units around, and then they also had test pits they developed.

They would -- a test pit is where they -- a big cylindrical thing of concrete with different values of uranium in it so these people could drop their logging -- these commercial outfits could put their logging -- the radiation detector down the hole and pull it up and make a graph and they knew

exactly how to read that graph because they knew exactly what the material was in the concrete there.

And that was a big service we did to the industry. These test pits were Texas, Wyoming, New Mexico, Washington state, anyway. These were calibration pits so the industry could calibrate their own units. And the concrete they put in these pits were put in in different layers with different amounts of uranium in them.

And here in Grand Junction, they built pads out at the airport with radioactive material in them they could fly over and detect so that people flying around in their own airplanes could fly over them and get an idea of the calibration. I guess we still have those out there, don't we? They're still out there. Because I know a few years ago, Canadians were coming down here to do this because they didn't have anything like that in Canada.

Q Okay. On the next page, Page 20, there's a section entitled: Access Roads. And I'm curious. On Page 21, there's mention of a summary report prepared in 1960 for all of the access roads constructed.

A Where is that? Oh, yeah.

Q And have you ever seen that?

A No. I have looked for it, because I found the Arizona -- Arizona -- I found the Arizona section and New Mexico section, but I have never seen the Colorado or Utah or the other states' sections. This is -- it looks like one big report, but yet, in going through the -- when we were sending stuff from Grand Junction to the National Archives, we did find some of these State reports but not the whole big volume, and I don't know where it is.

Q There's mention on the bottom of Page 20 of an agency called the Bureau of Public Roads.

A Yeah.

Q What agency was that part of? Was it --

A That's probably now the Department of Transportation or something. It was a federal agency, but -- and I know the roads on the Navajo Reservation, we worked with the Bureau of Indian Affairs' road department to build the road into Monument Valley. It says 17 million. 14 was AEC and 3 from federal aid or state funds. So it was kind of a joint program in certain areas, apparently. Where that data is today, I have no idea.

Q Okay. Let's jump now to Page 34.

A 34. Okay.

Q Okay. And there's a section entitled: Research and Process Development. And this appears to discuss the role of the pilot plants at Grand Junction; is that right? And if you see at the bottom of Page 34 and the top of Page 35, there's a discussion that the purpose of the program was twofold: Amenability testing and develop and test new processes.

A Right.

Q Were you familiar with that work at all?

A No. I know it went on down there, but it was all chemistry. I didn't...

Q Okay. Let's turn to Page 36, and the next category is: Sampling and Assaying. Yesterday when we went through some of the reports on occurrences and the drilling program, there was quite a bit of mention of sampling.

Can you describe for me the instances when AEC would take samples at a mine site.

A Oh, this -- this is really talking about the uranium concentrate that came in here. Like they had the sampling plant set down there, and all of the mills that had the AEC -- all AEC -- all the concentrate that was being bought by the AEC, the

yellowcake, had to come in here to be sampled to make sure it met the government's specifications. Because these ores varied all over the country, and they couldn't have excess amounts of vanadium or selenium or molybdenum or all kinds of other contaminants. And so they had this elaborate sampling plant.

In fact, I remember there was -- seeing the pictures. The big mill up at Spokane was shipping their uranium down here by railroad car, and they had a site -- there was a siting into the site down there when the government bought that land.

And -- but a lot of it came in by trucks. Like the mills in Grants, they trucked it all in here in drums and it was -- and they had an elaborate system of sampling -- taking a drum and sampling it from this lot. They kept them somehow. And if -- say if the molybdenum was too high in this drum of yellowcake, the government wouldn't buy it and they'd set it aside and send it back to the mill.

And so it was really make sure that all the yellowcake the government was buying met their specs before it was shipped off to -- where did it

go -- to Weldon Spring or someplace like that. And that was a big business here, and they had quite a few employee -- contractor employees employed to the sampling plant.

Q Let's shift gears just a little bit and talk about field sampling.

A Uh-huh.

Q I had the sense yesterday there were a couple different scenarios where AEC would sample. One of them seemed to be if someone called and wanted help evaluating an occurrence.

A Yeah.

Q Would AEC take a sample?

A Yeah, as long as they gave us a location. They just couldn't say, Well, I found this out in the desert here someplace. They would not sample it. They said, Well, we need all -- and we'll keep it confidential. And so they did a lot of sampling for prospectors and that, and some of the stuff was no good. But, anyway, that was a service they provided to get uranium as part of the uranium boom.

Q It also seemed that in the certification reports, there were instances where AEC would take samples. Does that --

A Yeah, yeah. On the certification report,

you had to ship ore. You just couldn't say, Well, I'm going to ship ore. You had to be actually mining. And so, you know, report on the certification reports that at a certain date, so many tons was delivered to this buying station someplace, and the company had to provide a receipt or something to prove that.

Q And then we looked at several reports on AEC drilling programs.

A Oh, yeah.

Q And AEC would take samples.

A Yeah, we'd take samples of -- anyplace that a drill hole would encounter any kind of radioactivity, wind it up. And in the field camps we'd work 10 days when we used to work 11 days, and then they said, No, you've got to pay us over -- some guy complained and said you've got to pay the overtime for that one day. And so they said, No, we aren't. We're only going to work 10 days.

So we worked 10 days in the field, and in the middle of that 10-day period, most of the field camps would have a supply truck come down and bring supplies, and they'd -- we'd load them up with samples that would come back to the lab. So all that sampling was done here in the lab. We had a

real extensive lab and they were really proud of it because it was really a good lab.

Q Can you think of any other reasons that AEC would sample?

A No. It was really to determine how much uranium was being found here and there.

Q Okay. Now let's -- let's look at some of the photographs that we've just briefly touched on yesterday. I think we can start with Exhibit 94.

A Index No. 4?

Q 94.

A 94. Oh, okay. I thought I saw that yesterday.

Q I have a quick question on Page 1, which is an old photograph --

A Yeah, aerial photo.

Q -- of the Grand Junction compound.

Which building -- did you say that one of these buildings in the bottom left is the mill at the time?

A The sample plant is -- you see all these drums stacked here, and everything to the left of that is the sample plant. It's a whole series of buildings here.

Q And is there -- is the pilot mill, then,

further down?

A No, this is all it.

Q Okay.

A I'm confusing you. This is the -- this is the pilot plant here. The sample plant is this big building up here, Building 7, which is this building right here, because this is where the railroad came in right here. This is -- here, let me...

Q Why don't you just...

A There's two -- I'm getting you confused. There's a sample plant that sampled yellowcake to meet the government contracts, and it closed in 1971. But the pilot -- and so the pilot plant closed -- this is the pilot plant down here. These are drums with material they sampled. Up here is Building 7. That's the sampling plant where the railroad siding came in.

Q Do you want to take your highlighter there and just mark a 1 by the --

A Put a mark on here for you?

Q Sure --

A Okay. This is -- and this with all these drums here...

Q Can you hold it up so -- he's going to take a little picture of it.

And so you have marked the pilot plant and you've marked the sampling...

A Concentrate sampling plant to make sure we're talking about concentrate and not --

Q Okay. You can put it back in and we'll come back to that later.

And now can we start with Page 5, and maybe you can tell me if you know what's shown in this photograph.

A Okay. Page 5. This is a picture that one of my coworkers took. Unfortunately, I did not take many pictures on camera, which I regret. I guess there wasn't any pretty red rocks, which I didn't...

This is one of the Huskon mines. I believe this is Huskon 10 that shows a little drill up here. And here's a worker with a dog and a wheelbarrow, and this is typical of -- this is probably the latter days. I think it was probably in '59, maybe, of -- in '59, I think maybe Cameron Mining Company was working the Huskon pits for you guys. But, anyway, this is -- this shows the typical topography at Cameron, the rolling hills of clay and all that. Badlands -- painted desert badlands we used to call it.

Q And would this mine have been one of the

mines that was rim-stripped?

A I -- I can't say yes or no because -- but being it's one of the low-numbered Huskon mines, I would assume it would be.

Q And when rim-stripping occurred, you mentioned that --

A They'd probably gone in here with a bulldozer and cleaned off the side of that little hill to see what it was.

Q So when you would look at a site, you might see, you know, one of these piles on the side could be material like that?

A Oh, by the time they mined, there's radioactive material spread all around the ground here, you know.

Q Yeah.

A They...

Q But the rim-stripping would just push it off to the side --

A Push it, yeah. It just cleared it off and they'd put it down on the ground.

Q Okay. Let's go to Page 6, and can you tell me what this picture shows.

A Yeah, this is -- this is a project I worked on on Cove Mesa. This is a non-core wagon

drill. This is called a wagon drill. It's -- it's on a truck instead of a wagon. But it's air-driven percussion. This drill mast, it's got a drill rod in it. It's up and down chewing at the rocks and turning at the same time. And compressed air that's on the back of this truck here is blowing the cuttings up, and they are collecting in here in these two plastic drums down here. And they're spreading them out on the ground here -- you can't really see -- for the geologist -- for me to look at. And you can see there's bushes right here. Bulldozers clean this path out here where the drills sit on.

If you go back to this other picture, this is on the Rattlesnake 4 project.

Q You're talking about Page 7?

A Yeah. You can see it's all kind of sandy out here and sagebrush, and the bulldozers cleaned out an area here for the drill to get in. And the drillers' helpers are collecting samples and putting them down here on the ground for me to look at.

Q Same type of drilling?

A No. It's a rotary drill. It's a kind of drill used on seismic -- like what the oilfield workers used on seismic work. It's rotary turning

around like this and air is blowing the dust up in the hole.

Q And would a core come out of --

A No, there's no core here. This is all dry rotary, which is dust. It's a dusty job.

Q And so material would come out the --

A Yeah, the material would come up the drill rod and collect in these plastic containers here and they'd dump them on the ground, like these two guys are doing over here.

Q Okay. And they would just leave them on the ground --

A Yeah, leave them on the ground. And they were probably on the ground until they reclaimed that site up there.

Q And when you would get to the ore deposit, of course --

A Yeah.

Q -- some of the material coming up would look different?

THE REPORTER: Wait. You guys are talking over each other, and it's making my impossible job even more impossible.

MR. NEUMANN: Okay.

THE REPORTER: So can we try to --

MR. NEUMANN: I'll slow down.
THE REPORTER: Well, it's just a matter of talking over each other.
THE DEPONENT: Am I talking too fast?
THE REPORTER: Yes, you are.
THE DEPONENT: I'm sorry. But you're recording this, though, aren't you? You're making a tape of this?
THE REPORTER: Just try not to talk over him, please.
THE DEPONENT: Okay.
MR. TAYLOR: Can we go off the record for just a second, please?
VIDEOGRAPHER: The time is approximately 10:46, and we are off the record.
(Off the record.)
VIDEOGRAPHER: The time is now 10:48 and we're on the record.
Q (By Mr. Neumann) Bill, can you just clarify for us again which projects are shown in --
A This is the Rattlesnake No. 4 project, and the Northwest Carrizo Mountains down-dip from the Rattlesnake mines.
Q And that's Page 6?
A This Page 6, 94-6.

Q Okay.

A 94-7 is Cove Mesa No. 3, I believe it is, and that's on Cove Mesa. And this is -- this was a wagon -- it's like a jackhammer but it's vertical. This is -- you can see these guys are even wearing respirators. They are supposed to be anyway, because it's very -- both of these projects are very dusty compared to core drilling.

And now this shows better how -- here on 94-8, this device on the left of the photo is a duclone, D-U-C-L-O-N-E. It's a specialized dust-collecting machine, and the dust is being blown up the drill hole, goes in here, and they catch it in these plastic bag -- plastic containers down at the bottom.

Q And then what would they do with --

A And then on this contract, I remember the driller helper, this guy over to the right, he had to go dump out on the ground -- every 5 feet as the drill rod dropped, he would -- he would dump it out on the ground for me to look at.

Q Okay. And which project is this on --

A This would be Cove Mesa 3.

Q Okay. And can we move to Page 9.

A 9. Now, this is a different kind of

drilling. This is -- this is a core rig. This is on Rattlesnake 1 out here in the sand flats. And you can see the bulldozer to the right of the photo. You can see where the bulldozer is bulldozing a little trail in here to get the drill rig and the water truck in here. And these boxes are core boxes where they're going to put the core in.

Q And this is where you mentioned a lot of times the cores were not saved --

A Yeah, they'd put them in these core boxes and then we'd haul them back to the geology office and really study them in detail and scan them and all that.

Q And sometimes you'd just dump them on the site --

A Oh, yeah, we kept them for a while.

Q Okay.

A And then when the bosses said, Well, we aren't going to save them all. Let the Navajos have the wood.

Q Okay. Page 10.

A This is some more of that Rattlesnake 4 project. This just shows the drillers standing here around all this dust, because it's a very dusty project. And this is a typical setup on the same

project. Here is a -- here is the truck with the drill rig behind it to the right. To the left is a truck with an air-compressor on it because it's all done by air. Here it looks like a bulldozer sitting here on the right. And these gray vehicles are AEC vehicles. This Jeep belongs to the drillers.

And, anyway, this is out in the sage plain. In the background here on the left is Red Mesa. The Red Mesa is a big landmark up in that country. This is -- this is that -- this is this real sandy area between Red Mesa and the Toh Atin anticline, T-O-H, A-T-I-N.

Q And you were talking, for the record, about Page 11?

A Pardon?

Q You were talking about the photo on Page 11?

A Yeah. That's, again, Rattlesnake 4.

Q And let's look at Page 12.

A Oh, that's my partner -- that's my partner, Ron Nessler. We are measuring a section of rock -- see how thick the salt wash is -- up the side of, I think, Mesa 5 or something like that. This is in the Lukachukais, and that's...

Q Okay.

A And 13 is a dinosaur bone over on Mesa 5 that one of the -- I never found this, but the guy that took this picture, Ken Hatfield, he swore that it was there on Mesa 5 and real radioactive. And he said, We'll leave it there for posterity, but I never saw it.

Q Okay. What about page --

A The age of these rocks is during the age of the dinosaurs, so we did find a lot -- in the Morrison Formation, there are a lot of dinosaur bones all over the Colorado Plateau.

Q And what about Page 14?

A Well, that's a pretty sad photo, but this is a photo that I took, I think, of the AEC airplane. This is the Cove Day School, but you can't see -- Cove Day School of the BIA right in the center of the photo. And the road up Mesa 5 is this road that goes up and winds through the center of the photo up into the Lukachukais here.

What's interesting, Kerr-McGee is building a field camp right down here in this area right here. And they're just scraping up the ground, and that would be where -- when Kerr-McGee really got going in the Lukis, that was their headquarters and the ore transfer station. Little trucks would bring

the ore down out of the mountains, dump it here, and then 20-ton trucks would haul it into Shiprock. So that is a -- that's the Cove ore transfer station, which I'm sure it's on your list someplace.

But that's poor color on here, because that is a -- but if you look -- if you can look, behind the day school there's a row -- there's two rows of AEC trailers for our drilling camp. That's bad color really.

Q What about Page 15?

A 15. That's up on Mesa 5 looking over toward Viewpoint, which is a high point there east of Mesa 1. These are some -- that's the road on Mesa 4 over here. Or maybe that's -- no. The road came up Mesa 5. That must be Mesa 4 over here to the -- where you see that road cut through the trees there.

Q Yeah.

A And if it was a better photo, you could look up here to the upper left and see Shiprock in the background, but you can't do it.

Q What about Page 16?

A 16. This one? 16?

Q Yes.

A This is -- this is out of my PowerPoint

talking about mining. This is a typical decline mine at Uravan. A decline means you don't go down vertically with a shaft. You go in at an angle, as you can see here. And your little ore car -- they're pulling up a little ore car and going to dump it here. And they'll have a place at the end here for the truck to go over to get the ore. And this shows a ventilation fan right here by this pickup, and they're blowing fresh air down to ventilate the mine, get fresh air and get the radon out.

Q Is Page 17 --

A But, however, Dr. Sakamano looked at this and he said, That doesn't look like a very good idea. As they're blowing fresh air out here and the radon is coming right back up and they're sucking the radon in again. Anyway, that's -- I never thought of that.

But this is -- this is probably a Union Carbide mine in Paradox Valley. And this is pictures showing the status of some of these declines around today. But now the BLM has gone out and burned all these up, filled in, and reclaimed that land site. But this is on Calamity Mesa in Mesa County.

Q That's Page 17?

A Yeah. And this is the Woodrow head frame over on the Laguna land -- Laguna Pueblo land north of Laguna. Woodrow, W-O-O-D-R-O-W. And that was a very good mine for Anaconda.

And this is -- these are all mixed up. This shows -- this is stripping a large, open pit in the Gas Hills, Wyoming by Lucky Mc uranium.

Q That's Page 19?

A Yeah. Lucky, then M-C.

Q Okay.

A That's -- besides the Jackpot -- Jackpot is probably the largest open pit mine in the U.S. uranium, and this is the second largest uranium mine.

Q Well, let's...

A These are mostly Wyoming pictures there.

Q Okay. Can you flip forward and see if we get back to the Cameron area in any of the later photos.

A This -- I did give you an index of these photos when you copied them.

Q Yeah, they --

A This is Maybell, Colorado. This is -- this is the Anderson mine in -- near Wickenburg,

Colorado -- I mean Arizona.

Q That's Pages 26 and 27?

A 26. 26 is Maybell, Colorado. Anyway... Okay. This -- this is back on the reservation. This is out in Monument Valley at, I think, Industrial Uranium's Big Chief Mine.

This is a poor boy -- the truck's been loaded with ore, and there is a guy out here with a T-probe probing the ore in the truck to tell the truck driver where to take it.

Q This is Page 30?

A Because the big mines had -- this is all -- this is all mechanized, but this is a poor boy here at 30.

And 31 is a big ore bin on the Hummer Mine down at Uravan, and that's a 20-ton ore truck that's being loaded with ore.

Q Can I ask you: The 20-ton ore truck, is that typical of the types of trucks --

A Yeah. This is the 20-ton truck or big ones. In the Lukachukais, Kerr-McGee used those 6-ton trucks for bringing -- to bring the ore down to their transfer station. And then after they get enough ore in there from one mine, they send a big -- a big 20-ton truck in to load it.

And the same thing with Climax Uranium in the Lukachukais, they would take the ore down in 20 -- in 6-ton trucks, take it out to Highway -- old Highway 666 to their transfer station, dump it, and when they got 20 tons, they'd take the 20-ton truck down to Grand Junction to haul it up to their mill, so...

Q What about --

A This is typical of the big trucks that hauled uranium ore.

Q And would it be typical of the trucks used at Cameron?

A No. They used 6-ton trucks. What I don't remember is they -- ah, yeah, maybe -- that one trucking contractor did have 20-ton trucks like this to haul to the Tuba City Mill. I don't remember them mills having 20-ton trucks. Blakemore used a trucking company and I think he used 20-ton trucks.

Q Okay.

A Here's just a typical miner drilling a hole in a mine. And here is another miner drilling a hole and here he is smoking again, smoking.

Q Are any of these pictures from 32 to 37 in the Cameron area?

A No. These are all at Uravan.

MS. RUDOLPH: Candice, should we...

THE REPORTER: My hands are going numb.

MS. RUDOLPH: We need to take a break.

VIDEOGRAPHER: The time is approximately 11:00, and we're off the record.

(Recess taken.)

VIDEOGRAPHER: The time is approximately 11:09, and we're on the record.

Q (By Mr. Neumann) Bill, can you take a look at Exhibit 94, Page 39.

A Uh-huh. This is -- this is a pin. This is an artist's sketch of a pin that were given to all employees of here in -- I guess all over the country who worked on the Manhattan Project. And there were several Union Carbide people that used to wear these around that worked for U.S. Vanadium during the Manhattan Project and then came in and worked in the uranium. But they're all passed away by now, but that's an artist's -- it's a little pin about the size of a quarter. And Joe Hopkins, a metallurgist, he was really proud to wear that.

Q Okay. Can we turn to Exhibit 95.

A 95. Okay.

Q Can you tell me what this -- there are photographs in this exhibit --

A Well, on the Nez Tsosie work, El Paso had a guy -- the law firm there, O'Connor and company, they got ahold of an El Paso plane that flew pipelines. They'd fly the pipelines to check things. And so we flew around Cameron one day, and I took a bunch of pictures out of the plane and these are the -- these numbers refer to -- these are Kodacolor prints, and these are the photo numbers of what I was taking pictures of.

Q Okay. So --

A And I still have a set of these, which I'm surprised I still had, but it's a series of the mines at Cameron, and I think I can remember which mines are which, but I'm not sure.

Q Can I --

A Once I had the number here to kind of -- my handwritten notes, but...

Q Can you look at Page 4.

A Page 4. I don't have 4. I have 35-3 -- I mean 95-3 and 95-5. I don't have 4.

Q It's on the back of 3. It's a white page.

A Oh.

Q Yeah. Do you see --

A 4 is blank.

Q In the bottom right it has a zero. I think this might be the back of the photograph and you wrote a zero on it.

A A zero, okay.

Q And so does that correspond with the Page 1 description?

A Zero is Ramco. That was a good picture, Ramco being -- well, it must have been a poor reproduction or something because I can't see anything here.

Q No. But is -- is Page 3 Ramco 20?

A That's the Ramco pit being reclaimed by Navajo AML, right. I can recognize that.

Q Okay.

A Because they've got bulldozers pushing stuff into the pit and all that.

Q Do you know who was doing the reclamation?

A It was a contractor that the Navajo AML had, and I don't know who it was.

Q So it was a project funded by SMCRA money, S-M-C-R-A?

A Probably be the Office of Surface Mining was funding that, wasn't it? This was the early reclamation at Cameron that the Navajos did? I

think it was Office of Surface Mining money, I think it was, or somebody -- somebody's money. But it was managed by Navajo AML in Tuba City.

Q So in the photo on Page 3, where are the pits? Is it where all the tracks are?

A They are pushing rock from up on the surface, but down in the pit -- this real dark line through the middle of the photo, that's the high wall on the north side of the pit. As I remember, this pit ran east-west, and they are pushing rock from up on top, from the badlands back to fill in the pit.

Q Was this a surface mine or did it have any underground work?

A Two of the Ramcos had little adits going off the pit walls, and I can't remember which -- I made a map of where and I can't remember which -- I don't think it was -- this is the big pit. It was one of the smaller Ramco pits that had underground. This is...

Q Can I ask another question on Page 3? When you were out in the field, how could you -- how could AEC or the mining companies tell where the -- you know, the claim was or the --

A Mining --

Q -- deposit was? Yeah.

A Well, they had them blocked off. They had posts around here, but they didn't last long. People would knock them down or borrow the fire -- borrow the firewood and all that.

But when these were certified, Rare Metals had rock cairns or something marking the claims, marking where the -- the corners of the mining permit. They were all marked to begin with, but they didn't last more than a week or two.

Q So it was a legal description?

A Yeah. A legal description for certification, and then it kind of got lost to the elements and to people borrowing wooden posts for firewood.

Q Do you know what is shown in Page 5?

A I think that's another view of the Ramcos, because it was a long, narrow pit and -- yeah, here is a construction site over here in the far background. And without having a number -- I identified these at the time, but I can't remember which it -- it looks like a Ramco pit with a long, narrow -- and there had been water staining in this pit after the rain because you see a little vegetation in the very deepest part of the pit here.

And that was brought up in the Nez Tsosie claim.

Q Okay.

A And I'm sure 7 is also -- it was one of the Ramco pits.

Q Okay. And what about 9?

A 9 is -- that's probably a distant view of the big Ramco, east-west Ramco pit.

Q It looks like the note says Yazzie 312.

A Yeah, this is 312. You can always recognize it because it was a big pit controlled by Utah Southern Oil, but Cameron Mining Company did the mining. And I forget who it was. They had a brilliant idea. We'll drill a hole in the bottom of the pit and look for uranium at a deeper level. Well, they hit artesian water and they flooded the pit, and it became the Cameron swimming pool.

Q And this is, again, Page 9?

A Yeah -- this is Page 11.

Q Oh, 11.

A 11. And also 13. And these, I think, are the Alstalemo pits here in 15. They hadn't -- hadn't been reclaimed because you can see the vegetation where water stood in the pits.

And 17 I really know. That is Max Johnson, I think -- 17 maybe or 19. And it was used

as the Cameron dump. So everybody in Cameron would bring their trash out here to this pit. And here is another pit over here to the upper left that hadn't been reclaimed yet. You can see the waste rock on each side of the pit and the pit outline where the vegetation is where water stood after it rained.

And this 19 is a reclaimed pit. This was -- in the center picture here, it was where there was an open pit. I think it was one of the Huskons. And Navajo AML had pushed everything back in there and leveled it all out, and all you could see now was a change in the surface color of the rocks. I can't remember that number.

And then we come back here to Yazzie 312 again, the Cameron swimming pool.

Q That's Page 21?

A This is 21. And this is an aerial view looking -- this is looking at Huskon 1, which is kind of in the center of the photo. And it's looking to the northeast, and the water you see in the center of the photo, that's Yazzie 312.

Q This is Page 23?

A This is Page 23. And this -- this is one, I think -- I can't recall what that is, but anyway, it's a bunch of Cameron...

25 is -- go back to my notes here, if I can recognize it. So the pit with the trash in it is Max Johnson 9, not 16. I can't recognize what 25 is, but it's obviously down here -- near the center of the photo is a stripped area of the -- disturbed area where there's a mine.

Now, I know this pit. 27, that's the main road from Tuba City up to Tonalea and -- no. That's the main road that goes to Marble Canyon. And right along the highway here, between this wash that cuts down here right to the left of that, that's the reclaimed Jeep pit. That white area right here is the Jeepster pit been reclaimed.

MR. NEUMANN: Bill, we need to take a break for the video.

THE DEPONENT: Oh.

VIDEOGRAPHER: The time is approximately 11:20. This is the end of Tape No. 8. We are going off the record to change tapes.

(Recess taken.)

VIDEOGRAPHER: We are on the record. This is the beginning of Tape No. 9 in the deposition of William Chenoweth. The time is approximately 11:25.

Q (By Mr. Neumann) Okay, Bill. I think

we're through in Exhibit 95 all of the photos that had to do with the Cameron mine.

A Okay. Yeah.

Q So I'd like to move on. And could you just remind me what Exhibit 96 is. It looks like a PowerPoint-type presentation.

A This -- beginning with 96, this is a PowerPoint presentation I was asked to develop, I think, for the college or Mesa -- then they were Mesa State to show the students about a little bit. And I had given this many different times, this particular PowerPoint. I might even have given it down at the site one time. But, anyway, it's a long, lengthy history of radioactive mining -- radioactive material mining here on the -- southwestern Colorado and...

Q There are a few photos I haven't seen before. Can you look at Page 54.

A Which one?

Q 54.

A 96-54?

Q Yeah.

A A lot of these are just -- oh, yeah. 51, 53, 54.

Q What does that show?

A That is the Rajah -- that is the Rajah 30 head frame, R-A-J-A-H, head frame on Beaver Mesa, just west of Gateway, Colorado. It was a Union Carbide operation on public land of Rajah and like claims. And the BLM had left it there as an artifact of uranium mining.

Q Okay.

A With a sign there, Keep Away. But, anyway, they -- and the same for 55. This is another Union Carbide. This is Long Park 16, I think it is. They have left this as an artifact of uranium mining.

Q What about Page 59?

A 59. 59, that is the Packrat Mine up on Beaver Mesa that been -- never been reclaimed. You see you got two open adits here and a little house over here, probably where the air-compressor was. And it is -- that land, I think, has now been acquired by Energy Fuels as part of their big package of claims up on Beaver Mesa. But that just shows typical cliffside mining where they went into a cliff just straight in. They didn't go down or anything like that. That's the Packrat Mine. It's an old, big historic mine in the Gateway area, Gateway, Colorado area.

Q Let's turn to Exhibit 97, and can you remind me what this presentation was?

A Yeah. This -- there's a mining club here, and most of it is old retired guys from Carbide and Climax and AEC and everybody. And we used to get together once a month. And one of the guys went to China for a geologic meeting and he took his wife and he made a -- came back and gave a good slide presentation.

And they started bugging me, Well, you and your wife spent some time down on the reservation in the early '50s. How about giving us a presentation at one of our social meetings. And my wife says, Well, you're going to do it. I'm not going to. And I said, Okay, I will put something together, but you'll have to narrate your slides.

And, anyway, so this is a presentation that we gave to the mining club and then we have given it to somebody -- this has been given two times to the public and I showed it a lot. A lot of people have come to our house and seen this. The kids -- our kids have looked at it and said, Wow. And I think the radiation people, DOJ, have seen it. But, anyway, it's a summary of --

Q Can you --

A -- part of my work and part of her work on the reservation in the '50s. And this is -- this is a rug from the Tsisoupous area we had. And here is a map we looked at. No. 2 is a map we looked at yesterday showing the mining areas on the reservation.

Q Bill, can we jump to Page 35.

A Oh, sure. We don't want to go through all the other stuff. 35. There's a lot of just -- 35. Oh, you're going to skip the pretty pictures of the Lukis. 35.

Q Well, do any of those pictures of the Lukachukai show areas that were --

A And that was -- that's the Kerr-McGee Big Mesa 2 Mine in the canyon there, and it's a real scenic view, I think. And then these mining pictures are some I got from my friend, Will Derr. You said 35. Okay.

Oh, this is a series of camp -- the Cove Mesa camp, and this was an AEC field camp where trailers are all lined up here. We had a water tank someplace on the hill and an electrical generator someplace here, maybe out here to the right. So it supplied -- we had water, waterlines to the trailers and electricity to the trailers, and then we used

butane. They had tanks of butane in the trailers.

And this was one of the prettiest camps, but the safety people didn't like. They said, Well, if they ever have a fire, you'd get burned up because of all those trees, so -- anyway, the gray trailers are government-owned trailers, and this one bluish one, that's a privately owned trailer.

Q What about Page 39?

A These next pictures are just pictures of -- 39, that's -- 38 is me in 1953 in my trailer there.

But 39 is the road up Cove Mesa. It goes up this arroyo and then there's a series of switchbacks, as shown on the next one, to get to the top of Cove Mesa, because Cove Mesa is just a small mesa, elongated, and flat on top. And it's got uranium mines all around the edge of it, and the AEC drilled in the middle and found a lot of uranium for the VCA to mine.

Q Did AEC build this road?

A Yeah. That road was an old Indian trail, Navajo trail, and the AEC did improve it with a bulldozer to get the uranium out.

And this is -- the next picture is a loop road where you had to come up on the right and make

a loop to go up on top because it's steep.

Q That's Page 40?

A And this was really treacherous in the -- I used to visit this mine once a month. And in the wintertime, this road was -- you had to go up in the morning when it was frozen and then get down in a hurry because it was mud. And these are the drillers we saw before drilling up on Cove Mesa.

Q 42 -- 43. Sorry.

A 43 is again this wagon trail on Cove Mesa No. 3 project. And you see the bulldozer bulldozing a road in here where my Jeep is, and these guys are -- this is -- this is an air-compressor on the back of the truck and they are drilling a hole right here.

Q What about 45?

A This -- this is Bob Scarborough of the Arizona Geological Survey. I took him up there and he says -- he says, Take my picture so that my boss will know I'm up here.

This is typical of one of these same mines on Cove Mesa. They went in from the -- went in from the rim -- this is the rim out here. They went in from the rim and mined a little pot of ore, and we called it a -- I think it's called -- somebody said,

well, it's not a dog hole. It's really bigger than a dog hole, which is just a little kind of a prospect. But, anyway, that was one of the VCA mines on Cove Mesa.

Q Okay. What about Page 55?

A 46 is where we're moving camp over to Rattlesnake. 45?

Q 55.

A 55. 55, that's again the Rattlesnake No. 4 project that I showed earlier. It's just a blowup of that photo. Bulldozer here on the right, drill rig truck with an air-compressor, a contractor's Jeep with a fuel tank, and the two AEC vehicles.

Q What about 57?

A Okay. The guy sitting here on the right, sitting on the -- out here with the respirator, he's a sampler. He is -- and the big duclone is up above him. He's taking dust samples out of the duclone and he pours them out here on the ground. And his helper is here, the second from the left, dumping the samples. And this driller -- I don't know -- this is a drill helper. And that's me getting ready to make notes on what I'm seeing in this dust down here on the ground.

When we got through -- there's the layout.

We'd been staked over here by the drill hole. And when we got through, we just walked away and left all that on the ground out here, except we sampled -- we scanned it with a Geiger counter or we took a sample of that.

Q And this was an AEC contractor helping?

A Yeah. Let's see. I'm the federal -- I'm the AEC employee, and I think all these other people here are drill contractors.

Q Okay.

A That's taken in the fall of '54.

Q What about 58?

A Oh, yeah. This is -- this is -- this is Mr. Barnes, and that's an AEC experimental logging truck. Things have come a long way since then. This is '54. This is an AEC -- he's lowering an AEC probe down in the hole to detect radiation. And it's going to be pulled up and an instrument in his truck here is going to record any radiation that it might have. This is sort of -- the AEC did a lot of research on making these probe things, and this is one of the early ones and they've come a long, long way since then. But going back, they make a graph on paper of what it finds as he pulls -- this wench pulls it up.

Q Could that data be correlated to concentration --

A Yeah, yeah. They take the log and then take the geologic log and try to match it up, but there's always a lag from the time those samples -- the drill cuts the samples until they blow up the hole, so you have to make adjustments. But this is really -- will tell you really a good idea of what the drill has penetrated as far as radioactivity.

Q And you said you measured the dust on the ground with a Geiger counter?

A Yeah.

Q Did you have a sense what the concentration of uranium would have been in that?

A Oh, yeah. Our Geiger counter was kind of calibrated on a very crude method, but we didn't have it calibrated. And we knew if it went over so far that it was getting close to ore grade. But this was in '54. This is pretty primitive stuff compared to the industry a few years later.

Q Okay.

A That's one thing the AEC did here to help industry is they developed these probes and then pits to be calibrated for the industry. See, here's -- the drill hole is right here with a little

piece of plastic to collar it so it won't cave in on him.

Q What about Page 59?

A Well, that is a Navajo sweat bath, a tutshai, something like that.

Q Okay.

A We told the Navajos we would not destroy any of their stuff out there, so they'd heat rocks, get in here and take a sweat bath, and that was -- and that was -- so we -- and this is a type of area that we drilled in Rattlesnake 4 so you see the bulldozer kind of had to make tracks around. But when we found out, we detoured it. We'd even move the drill hole if it was close to one of these sites. Those are the rocks they used to heat to get hot.

Q Let's look at Page 71, which looks like it gets into Monument Valley.

A Well, up here on 70 is a map that VCA gave Bob Scarborough of the Monument 2 pit with the old underground -- first it was underground mines. Anyway, these -- this is -- this is -- shows the underground mines that were all eventually destroyed by the big open pit. And this is an aerial photo I took looking to the south, southeast down the trend

of the Monument 2 pit. And it was -- it was the largest single mine in Arizona during the AEC program. It produced -- I forget how many million -- over 5 million pounds of uranium. And this is all waste rock laid out here in the middle, and, anyway, it was a long, narrow pit as shown in this map on 70.

Q Okay. Let's look at Page 82, which gets into Cameron, and just let me know if you see any new photos. I think we just went through these photos.

A 82?

Q Yeah.

A These are -- these are the same pictures we looked at before. This is a better reproduction of -- taken on the ground of, I think, Huskon 10, maybe, if I'm remembering right. In the background, it looks like he has an air-compressor here and he may be drilling some holes to blast or -- I really don't know. It looks like they weren't really getting a lot of ore moved -- rock moved that day.

But this is the Jack Daniels pit that's full of water and it was the largest single mine. It produced more uranium than any other mine in the Cameron District. And at the center of the photo is

this gray area. That is Huskon No. 9 that has been reclaimed and...

Q This is Page 83 you are looking at?

A 83 is Jack Daniels No. 1 pit. And laying around on the surface here, this is a good example of the contamination they had at Cameron. All this gray stuff around here is waste rock or low-grade material. Some of these are low-grade piles that were removed from the overburden. This wasn't a very deep mine. I think the deepest part of this mine was only about 20 feet. It was really a shallow...

And it was called Jack Daniels -- get off the subject here. But some guys driving down the old highway got an anomaly holding a radiation detecter outside their Jeep, and they got out and they looked around on the ground. And there were some cuttings around a power pole, and by that power pole was a discarded Jack Daniels bottle. And so they kind of made a vow, Well, if this ever turns into a mine, we are going to call it the Jack Daniels mine. So they got a drilling permit and drilled out here and found ore, and then they went and got a mining permit from Denetso and Mary Denetso. And they always said, Well, Jack Daniels

is a better name than Denetso No. 1.

And then after the highway was moved -- this is the old highway -- to the Navajo bridge, Page Blakemore came in and found -- mined about 300 tons there. You can see a cut across the old -- the old highway right-of-way in the picture here. And here is his waste dump on the other side of the highway, the old highway, before it got realigned.

Q Okay. I think we've seen the rest of these photos, so I would be inclined to break now.

MR. NEUMANN: Let's go off the record.

VIDEOGRAPHER: The time is approximately 11:44, and we're off the record.

(Lunch recess.)

VIDEOGRAPHER: The time is approximately 1:20, and we are back on the record.

Q (By Mr. Neumann) Bill, I would like to have you take a look at Exhibit 65 now, and this is a document we looked at yesterday. It's entitled: Draft Report Regarding the Cameron Mining District Activities and Practices.

A What exhibit?

Q I'm sorry. It's 65.

A 65. Okay.

Q Okay. And maybe we could start on Page 4, and in that second full paragraph that starts on June 26th, 1952 -- let's see. I'm sorry. Right above that: During the summer of 1950, Hosteen Nez found an exposure of uranium-bearing rock, and AEC hired Charles Huskon to prospect the Cameron area.

If I remember right yesterday, you told us that AEC had hired maybe several Navajo.

A I think in that report I wrote exactly the -- but, anyway, about 12 men they hired, 12 Navajo men. And then they hired one Hualapai man to prospect over there. Anyway, but...

Q What did they do for prospecting? Was it just Geiger counter --

A They'd issue them -- well, first of all, there were -- you see, he hired two young men who were the son of traders in Northern New Mexico. I think one was a Pueblo Contada and the other one was a Tinian Trading Post -- anyway, these young guys. And they could speak Navajo fluently and they would go around and find people that wanted some work. And they'd give them a Geiger counter and say -- and show them a piece of uranium and how the Geiger counter would click and says, you know, Go out and look around the areas you knew and we'll be back in

two weeks to check with you.

Anyway, they set up appointments and all that, and so they would check on them every two weeks and bring them a paycheck. And I know there were several -- I know three or four discoveries were made, but Charlie Huskon was the most successful. And apparently he went out there just not too far from his house and found the Huskon 1 deposit.

Q And he -- do I remember right that he quit and started working for Arrowhead?

A Yeah. I think Arrowhead -- I think George Morehouse came -- heard about this or something. Anyway, somehow they convinced Charlie to drop working for Walker-Lybarger and come to work for Arrowhead. And, anyway, Charlie -- somehow they went out and they found -- I think maybe Arrowhead flew him around and he was pointing out places that looked good or something anyway.

Q Okay.

A He was -- he was the first one to really acquire mining permits in the Cameron area.

Q Let's turn to the top of Page 5.

A Uh-huh.

Q And I want to focus on the second

sentence: After evaluating the 17 Huskon properties, Rare Metals dropped their assignments of Nos. 4, 5, 9, 13, 15, and 16. These assignments were immediately picked up by Utco and by BC Associates.

A Uh-huh.

Q And my question is: When it says "after evaluating the 17 Huskon properties," what do you think that meant?

A I think Rare Metals geologists went out and looked at these. And for some reason, apparently No. 5 -- I know No. 5 was just a bunch of petrified logs out there. They saw that, but I can't speak for them. Probably they said these did not have the possibility to develop large tonnages of ore, because 5 was just a pile of petrified logs that were impregnated with uranium minerals. And 4, I don't know what they saw at 4, because it became the second largest mine in the Cameron District.

Q Is it likely they --

A By the time I saw 4, Utco was mining it and it had a big open pit there, but I don't know why Rare Metals decided to drop those properties.

Q Was it the practice to take -- to drill or sample claims?

A I don't know what -- how -- really how Rare Metals made that decision, but I know people in the end said, Boy, that 4 became a good mine. I don't know why they dropped it. That's what Blakemore said, Mr. Blakemore told me, so...

Q Do you remember whether Rare Metals would have shipped any ore from these mines, or because they were dropped, that never happened?

A You'd have to read that table in the back of my report. I can't remember. Let's see. What does it say? I have got in here which were the -- which were the original -- I know shipments were made off of No. 5, but I don't know if Rare Metals made it or Arrowhead made it. I kind of think Arrowhead might have made.

MS. RONGONE: Hi. This is Marie Rongone joining.

MR. NEUMANN: Hi, Marie.

Q (By Mr. Neumann) So can we -- maybe you can help me understand. Exhibit 57 is your 1993 report.

A Yeah.

Q And --

A What page?

Q If you look at Page 26.

A Of 65?
Q No, no. Of 57.
A Oh, I'm sorry. 57. Okay, 57. Okay. Yeah, that's -- this...
Q I was looking at Page 26.
A I'm looking at Page 19.
Q 19. All right.
A And the Arrowhead -- Arrowhead -- in 195 -- in 1953, you know, made shipments from -- from, it looks like, eight properties, including some of these that they dropped, like 5 and 4.
Q Where -- where -- what information did you review to prepare this?
A These are from the AEC annual ore production sheets that you guys all looked at and you got copies of when you were at my house.
Q Okay.
A Look on -- a section of that report says Arizona 1954 and you look under Coconino County and you will see all this.
Q The information in those production reports --
A Yeah.
Q -- did it come from forms that were filled out or --

A Oh, no. Those were generated by computer from all the different reports they got from ore-buying stations to mills. They would -- the ore-buying station and the operating mills were required every month to send in what they called the ore receipts. That was the ore they'd purchased, and the AEC would get this and put it in their computer and make those computer sheets.

Q I see. So in 1953, there must have been a receipt from a buying station.

A Yeah. In '53 it looks like they shipped from eight properties.

Q Okay.

A No. They shipped from nine properties.

Q Okay.

A But in 1952, they made the original shipment from the Huskon 1 deposit. And these shipments -- since there was no ore-buying station nearby, they hauled the ore down to Flagstaff, put it on the railroad, and shipped it over to the AEC ore-buying station at Blue Water, New Mexico, because that was the nearest ore-buying, the nearest market. So the Santa Fe Railroad made some money off of them.

Q All right. Now let's go back to Exhibit

65 and Page 5 where we were at the top.

A Uh-huh.

Q So Rare Metals dropped -- let's just -- as an example, Rare Metals dropped Huskon No. 4, and then Utco immediately picked it up?

A Uh-huh.

Q And that would have been distinguished or differentiated in the ore-buying station?

A No. Yeah, it would show on the ore -- on the ore production sheets -- this is probably information from Window Rock that the mining permit on No. 4 was canceled by Rare Metals and immediately Utco got -- had gone to Charlie and got a new assignment. And then in the records from the ore-buying station, the ore that Utco shipped -- that's U-T-C-O, Utah Colorado -- it would show in the ore production sheet that they had a new operator -- or a new controller that year.

Q Okay. So you think it's likely that Rare Metals did, in fact, ship ore from, in this case, Huskon No. 4. It just might not have been that much?

A Not much, no. We don't have the sheets here, but -- but I'm sure they made a shipment of some kind.

Q Okay.

A If it shows up in this table here, which it does in '54, I'm sure it did because this has been -- this has been -- I checked this and the Arizona Geological Society editor checked this against things to make it all correct, so...

But in 1954, it looks like, oh, yeah, there was 11,000 tons shipped from the Cameron District. And I would say the bulk of that ore probably came off the Arrowhead properties, looking at this table on Page 19 of my report.

Q Okay. And let's -- I'm back on Exhibit 65, Page 5, and now the third paragraph that starts out: After making small, low-grade shipments from Charles Huskon Nos. 8 and 14 and their Section 9 lease south of the reservation, the assignments and lease were canceled.

A I think that's information I got from Mr. Babbitt about Section 9. And apparently some -- maybe Window Rock told me that the assignments on 8 and 14 had been canceled. I'm just guessing -- I'm just guessing at that, but I don't know where else they would have gotten that information, because...

Q So on Section 9, Mr. Babbitt might have told you that there was a small shipment made?

A No. I think I went in to see him -- in one of my field notes that I've got copies someplace -- went in to see him about what had happened, what Mr. Rankin was going to be do -- because he was tied up in all kinds of legal stuff, all the business was done under Mrs. Rankin and not Mason Rankin. And the lease was, I think, signed to her -- over to her by the Babbitt -- by C O Bar Livestock, so...

And it was already confusing and I know I went in and got an appointment and saw one of the Babbitts, and he was -- told me about -- the lease had been acquired by Mrs. C.L. Rankin or somebody. I never knew what her name was, never met her, because Mason Rankin did all the work. It was just legally in her name.

Q Okay. And so now on your 1993 report, which is Exhibit 57 at Page 25.

A 25?

Q Yeah. And at the top, No. 43 is Charles Huskon No. 14. I'm sorry.

A What exhibit number?

Q Exhibit 57.

A 57-23?

Q Page 25.

A Page 25. Okay, yeah.

Q Okay. At the top of that page, the third mine down is Charles Huskon No. 14.

A Uh-huh.

Q And it says 46.54 tons of ore.

A Shipped by Rare Metals in 1956.

Q Okay. So we had just read in your report, After making a small, low-grade shipment on Charles Huskon 14, the lease was canceled. And you said it remained inactive after Rare Metals canceled it. So this tells me that the small shipment was 46 tons?

A 46 and over .11 percent uranium, which is low.

Q Yeah. Okay. With that much ore, how do you think they -- I thought I remembered reading somewhere some of the ore was high-graded where you sort by hand or do something to get some high-grade ore. Was that common on --

A The AEC price schedule in Circular 5 revised, you know, everything below .20 didn't -- I don't think you got initial -- the prices were better when you got -- as the grade got higher. I know when the mill was operating, the mill liked to keep all shipments at least at .2 percent uranium. But this early stuff that went through -- oh, '56,

it probably would have gone to the ore-buying station at Tuba City anyway. It was better for the operators to keep -- to try to keep close to .2 percent rather than get it way down at .11 of a percent.

And so there was eyeballing and looking at the ore that was being mined, and those miners were trying to keep the -- keep the higher grade material up. I wouldn't call .2 high grade, but it was better than the lower grade material, because that was about the average if I remember what the -- what the Cameron mines averaged out shipping in the end.

Q And Charles Huskon No. 14, if it was 46 tons, that was several trucks of ore?

A Yeah. That would be -- probably that would be at least three 20-ton trucks. If that's dry tons, it could be three big trucks. I don't know when they stopped shipping to Flagstaff, but this could have gone right up to the ore-buying station, whenever it opened. I can't remember when it opened.

Q How do you think they extracted that much ore at --

A Oh, they probably dug it out with a front-end loader. And I have been to 14. It's just

a small, little pit, you know, maybe 5 feet deep, if I remember. And, anyway, they probably just found a radioactive occurrence on the surface and dug it out with a front-end loader and put it in a truck and hauled it off.

Q And Section 9 of your report said that the shipment you just described maybe Mr. Babbitt told you about was about 17 or 18 tons -- about 17 tons at Section 9. Do you remember Section 9? Was it a small --

A I was never there when Rare Metals made the shipment, but when Rankin took it over, he showed me up to the north end of Section 9 where Rare Metals had dug around a little bit.

Q Okay.

A That was in -- that was in -- that's in that same -- that was in '57 that Rare Metals made that little shipment. I don't have it separated out here, unfortunately. I have -- in fifty -- in this table it says Rare Metals shipped in '57, Mrs. Rankin shipped in '58 and '59, and there's only one big total of 361 tons. So this table, he didn't show that small Rare Metals shipment.

Q Back on Exhibit 65 at Page 7.

A 65?

Q 65, Page 7.
A Uh-huh.
Q The fourth paragraph down starts: Ore near the surface --
A Yeah.
Q -- was removed by hand using picks and shovels and wheelbarrows.
A Uh-huh.
Q Do you think either Charles Huskon 14 or Section 9 might have been --
A Yeah.
Q -- mined this way?
A Yeah, I'm sure. Thinking back, that probably 14 was mined that way and maybe even 9. I don't know, because it was kind of messed up later, but Rankin probably looked around. Yeah, I'd say that picture we have of Huskon 10, I think it is, that looks like a wheelbarrow operation in that picture we showed earlier today. These weren't big, massive operations.
Q Okay. On Page 6 of Exhibit 65, that first paragraph at the top has a sentence: With the exception of the Ramcos --
A Which page?
Q Page 6.

A Okay. Page 6. Okay.

Q With the exception of the Ramcos, Charles Huskon No. 26 and the Section 9 lease, Rare Metals holdings in the Cameron District were restricted to the original Huskon 1, 2, 3, 6, 7, 8, 10, 11, 12, 14, and 17 properties.

So this is the list after the ones that were canceled that we just talked about?

A Uh-huh.

Q Is that right?

A Yeah, I would say that's -- yeah. What year was this? Yeah. That would be after they dropped -- Rare Metals dropped those other permits.

Q Okay. Can we look at Page 8 now.

A 8?

Q 8, yes.

A Uh-huh.

Q The third paragraph down.

A Uh-huh.

Q Since the Navajo Indian Reservation is considered to be Federal Trust lands, mining was carried on in compliance with the federal mining laws in effect at the time of mining. Mine inspections were carried out by U.S. Bureau of Mines personnel based in Denver, Colorado. These

inspectors made frequent visits to the operation mines.

I'm not sure I remember discussing this yet, but can you describe for me the role of the U.S. Bureau of Mines at the Cameron mines.

A They were -- they were charged with mine safety at the time, and I have seen other documents around here -- I have seen some of the reports and at the top they'd say Mine Permit No. so-and-so and so-and-so. That's the result of these visits they made. And they really enforced mainly safety regulations. You know, you've got to have your men -- periodically train your miners in the safety instructions, and there's all kinds of things in the federal mining laws they had to comply with.

And the tribe was more -- the tribe had their own mining inspectors. They hired semiretired mining engineers to do this for them. And they were more interested in safety, you know, store your dynamite properly, store your fuse, train your miners in how to use this stuff because it is dangerous. And they had -- they were out there -- they were out there very periodically. I think the feds came down maybe every two months or so. I don't know. You didn't -- I know in the Lukachukais

you didn't see them very regularly. I never saw a federal man at Cameron, but I saw tribal guys at Cameron.

Q Do you think they may have visited Cameron and you just didn't see them? Did you just say Bureau of Mines never visited Cameron?

A I never saw any Bureau of Mines people at Cameron, but I saw tribal mine inspectors at Cameron. They were more interested where dynamite was being used and that, you know, training the guys about using fuses and primers and all that.

Q If Bureau of Mines would have visited --

A Yeah, I forget the agency. Bureau of Mines was the agency, but there was a part of them that was due to safety. I don't know. It wasn't NIOSH yet and I don't think it was Mesa or MSHA or whoever it was. But it was part of the Bureau of Mines that was in charge of safety.

Q If they made written reports or other documents --

A Yeah, there's some in some of these books we saw yesterday. Derzay, Mr. Derzay was one of the men or something.

Q Where might I find their documents, do you know?

A When the Bureau of Mines got abolished several years ago, I would imagine somebody put all those documents in the National Archives, but I'm just guessing. They shouldn't throw them away because -- but who knows.

Q Okay.

A If they were stored at Window Rock, who knows?

Q Over to Page 9.

A 9?

Q In the first full paragraph --

A Uh-huh.

Q -- there's a sentence: In the 1950s and 1960s, there were no provisions to reclaim open pit mines, including the waste rock and low-grade ore left on the surface.

Is that consistent with what you remember?

A Yes.

Q And let's talk for a minute about waste rock and low-grade ore. What do you recall about how the miners would know when to stop mining? Was it when it got -- go ahead.

A With Geiger counters. They all had Geiger counters that the company kept sort of calibrated. And they would be checking -- I don't think they

checked every shovel load but maybe every wheelbarrow load and where it'd go. And if it was -- wouldn't meet -- if it wouldn't measure so much on a Geiger counter, they'd dump it over the hill here someplace.

And in that picture we looked at earlier of the Jack Daniels Mine, that just shows where a lot of this overburden and waste rock was just piled around the mine there. That was a good example of what happened to all the mines. The waste rock was -- which contained some uranium, I'm sure -- was just -- dumped it out of the mine, out of the way, so it wouldn't get in the way of the mining in the pit.

Q The mills would only accept ore that was at .2 or better?

A Well, they would accept -- they didn't like to take lower grade material, but I don't think they ever refused anything. Even if somebody hauled in some ore that was below .1 percent, which was below the AEC price schedule, they might take it but not pay the miners and eventually blend it into their mills to get a little bit of uranium so they wouldn't have to throw it all out.

Mills were always -- mill people were

always wanting to blend their ores to a certain percentage because that was the most efficient recovery in the mill circuit. And so I know people would send -- somebody I remember sending low-grade ore that they didn't get paid for, and whoever at the mill says, Well, you can either haul it away or leave it here. And they left it there and eventually it probably got put through the circuit, but they would blend it with some high-grade ore.

And when they were getting ore from the Orphan Mine in Grand Canyon, I know that was high grade, you know, point half a percent or so. That way they could put it into some of -- they cut the low-grade ore in with that. The mill people were really good at doing this. They had the expertise to know the grades of these stockpiles and say, Well, we'll take this ore or this ore and put it -- fix it up and send it through, because the ore has already been paid for and stored in certain areas depending on the grade of uranium.

Q And could the miners tell fairly clearly where the grade dropped off? I mean, was it dramatic?

A My experience was it would be hard to see. If it was real dark, it would be a higher grade than

if it was real light, because the uranium minerals were more dark and -- and there were some yellow minerals mixed in there too. But some of these miners got real good with their eyesight, you know, eyeballing the ore, they could tell pretty good, then they could check it with the Geiger counter. Cameron Mining Company had these -- were always training these guys to what to look for, I know.

Q AEC was training them?

A Yeah, to try to keep the ore from getting too diluted.

Q How accurate was the Geiger counter? Could it tell if you were below the .2 --

A Well, if you had a big pile of rock, you'd get more radiation than if you had a little pile of rock. So there is this mass effect, they called it, and so you always tried to measure in the same amount of volume that you were calibrated to. The company, I'm sure, had some kind of a calibration pit someplace for Geiger counters so you would know they were working right. So I think they probably would just say, well, keep their Geiger counters calibrated and then they'd have a good -- a rough idea of what's being dug out of the pits.

Q Did they ever measure the face of a pit

with a Geiger counter or just the piles coming out?

A Oh, no, they -- if they have a clean face in the mine, before they start shoveling out, they check that. And then I don't think they would check it again. Maybe they would check it again to see if it didn't get too diluted. But using Geiger counters in these days, that was really primitive but that's all they had.

Q At some point would they get to the point where the face of the rock was at a very low percentage of uranium?

A Yeah, then they would stop. If it was real low and then they had overburden above it, they'd probably get it diluted maybe 50 percent so they would stop. Because you already had dilution when you -- when you've got a face in the mine maybe 10 feet high or 3 feet high and you've got 2 feet of uranium in here and you are going to have to move that overburden and all that, you could be diluting it. So they had to be very careful not to dilute their ore too much.

Q When they stopped, was there still uranium in the face of the rock?

A Probably a little bit, yeah. Yeah, like in the big Ramco pits, there was ore in the pit and

then that's where Cameron Mining Company went underground to mine some of that. And other people went underground briefly to mine ore that was left in the side of the pits, because they couldn't -- the pit might be 20 feet high and they couldn't mine it because they had that overburden to take, so they'd scoop it out of the side of the pit until they said they couldn't, until it got diluted so bad.

Q Could you --

A But underground mining, you got to be -- you've got to have roof supports and all that, so there wasn't really much of that done.

Q Was there some uranium in all of the host rock in this area?

A Oh, yeah. In the pits you mean?

Q Well, and then if you went beyond the pit, what would you see?

A There would be maybe halos around the high-grade ore, I mean the better ore. But there would be areas out there that would be completely barren, I know, where they drilled. There would be a pod of uranium here and another pod over here and so forth, and there would be actually barren rock in between or so low that it couldn't be mined. And

there is -- there was uranium in the groundwater there, and so even some of these windmill waters had uranium in them.

I think a lot of this information might have been taken from that report referred to yesterday by -- I can't remember -- John Chapman maybe, who gave the talk at the mining convention in Denver because that's a real good summary. And he was actually mining, so he wrote a report about it. It's something we looked at yesterday. He talks about how they used Geiger counters to control the grades.

Q Okay. Let's go to Page 11 of Exhibit 65.

In this section, it looks like you briefly describe the leased land that Rare Metals mined.

A Right. Yeah, this is not in my Arizona Bureau of Mines -- Arizona Geological Survey. This is only in this report where I went through and had a certain write-up on each of the Rare Metals mines for the Nez Tsosie case. And this is where you'll find an individual write-up on each of the Rare Metals mines, no other place that I know of.

Q Well, that's one question I have is: It doesn't look like you wrote a summary on all of the Rare Metals mines.

A There must have been. I can't remember why I picked these out. Maybe because that's -- I mean that's what Mr. Woods wanted me to do. I don't know.

Q The lawsuit might have only included some of them?

A Yeah. I mean, obviously we go from 1 to 2 to 3, and then we skipped 4, of course, and 5, and then start with 6 again. So and then it does include up to 14 and then went to the Ramco. So it must have been the big -- the larger mines or something. I can't remember why I did this, to tell the truth.

Q Okay. If you look on Page 12 at the top, this is the paragraph on Charles Huskon No. 1.

A Oh, 12.

Q So the first full paragraph describes when mining was complete at Huskon 1, the pit was 600 feet long, 200 feet wide, with a high wall of 15 feet.

Does that sound right for the size?

A Yeah, that's something I wrote from my old field notes and things.

Q That was my next question. Where would you have gotten this information about the size of

the pit?

A Personal observation out there and my old field notes. Maybe not only my field notes, but field notes in the Flagstaff office, because some of this might have been done with my coworkers that measured pits, wrote up descriptions of the pits and things. Or it might be from the certification reports, you know, because the certification reports -- the final visits had descriptions of the workings when they were -- after they were abandoned, you know. And I remember doing that. They'd say, Well, this mine is so big by so big and so deep, and that's what it looked like after it was abandoned, so maybe that's where this -- that was in the certification report, so...

Q Can we look on Page 15.

A 15?

Q Yes. At the top in the paragraph that continues on Charles Huskon No. 14, you mention: When the author located the mine in 1958, it could hardly be identified, as the small pit was nearly filled with blow sand.

A Blow sand.

Q What is blow sand?

A That's sand the wind is blowing in. It's

not -- it's really not in the form of sand dunes; it's just sand that's blown all over the surface.

Q Some of the pit filled back --

A Yeah. The wind had blown sand from dust storms and all that into the pit, and -- oh, yeah.

Q Now let's look at Page 21. In the last paragraph: When the leases were terminated, the area of the mines were returned to the Navajo Nation with the approval of a representative of the Secretary of the Interior.

What did the representative approve?

A That -- as I remember, to cancel a lease, they had to have a joint meeting between someone in the mining department in Window Rock -- and the BIA was represented by a USGS man out of Roswell, New Mexico, and that was the Secretary of the Interior's representative. And because the USGS in Roswell was the BIA representative and they would always come out to make inspections to the mines also and they had to fill out a form: The amount of mining here is commensurate with the amount of royalty being paid. They were the royalty checkers for the BIA. And I remember seeing more of those -- those Roswell, New Mexico people.

There were the USGS Conservation Division,

and they were always out looking at the mines about every six months or so. And I saw one of their forms they had. It was, like I say, the amount of mining that's taking place in the last six months has come out commensurate with the number of tons that royalty was calculated on, or something like that.

And so this is a statement out of, I think, the mining -- the mining permits or the leases of our Secretary of Interior, but it was really a BLM representative from New Mexico, and that was...

Q Was there any discussion at this time about reclamation-type issues?

A Well, I have heard -- I've heard it said. This is all hearsay. That they would all get together, the chapter person and the mining department and the USGS and anybody else -- and the company. The had a company man with him. And they would say -- and maybe the USGS or somebody would recommend, Well, you ought to put a barbed-wire fence around this pit to keep the sheep from falling in, and that would be it. Nothing about pushing waste back in the pit or anything. It was just protecting it from sheep. And I...

Q Well, finish your thought, and then --

A That was -- that was -- I saw a report someplace in the AEC files of one of these mine closures reports, and that was it, just more worried to protect the livestock than anybody else.

MR. NEUMANN: Okay. We need to take a break to change the tape.

VIDEOGRAPHER: The time is approximately 2:00. This is the end of Tape No. 9 in the deposition of William Chenoweth. We're going off the record to change tapes.

(Recess taken.)

VIDEOGRAPHER: We are on the record. This is the beginning of Tape No. 10 in the deposition of William Chenoweth. The time is approximately 2:07.

Q (By Mr. Neumann) Bill, what I would like to do now is have you take a highlighter and mark on the map behind you the mining claims we just went through.

A Could you sit over here and could you read off the mine name and then the number and I can mark it here.

Q I will.

A That would be the best way to do this

because I only have one hearing aid today and I can't hear very good in this ear.

Q Okay.

A But you can say -- give a mine name and a number and I can -- I can kind of outline the mining permit with this green highlighter.

Q And first remind us what this map is.

A This is a map that has a very strange background. This is a map -- it's a bad copy because I -- somehow something got cut out of the middle and things got marked up down here.

But the original map was given to the Flagstaff office of the AEC when it was established in 1957. I think it was given to us a few years later by Mr. Page Blakemore of the Cameron Mining Company. And he said this will give you an introduction of the Cameron District mining permits and mining names and certification reports, and we said, Boy, this is great stuff.

And I don't know who drew it. I don't think Rare Metals had anything to do with it. I don't think Cameron Mining Company had the resources to do it. Whoever drew this up -- and the tribe didn't, because I showed it to them over at Window Rock and they said, Oh, that's a great map. I

wonder where they got the data.

And, anyway, it's an index to all the Cameron mines and mining permits. A lot of these names up here don't have mines on them. They have little cross-picks for the ones with mines on them. But it was -- and it's got a geologic base to it. And it's a mystery map because nobody seems -- in this day and age, nobody seems to know who originated it.

Q Okay. The first mine is Charles Huskon No. 5, which is No. 1.

A That's...

Q And in your '93 report, I see that only 320 tons came out of this mine.

A Yeah, I have been there -- oh, I have been to all of them, but it was just a pile of petrified wood impregnated with uranium.

Q And this one, you also had a note. It was dropped by...

A Arrowhead, wasn't it?

Q Dropped by Arrowhead and picked up by Utco.

A Yeah.

Q The next mine is Charles Huskon No. 6. That's mine No. 8.

A Yeah. 8.
Q This mine shows 746 tons. Does that sound right?
A Yeah.
Q Was it a small mine?
A Let's see. Where was it? Yeah. I don't recall that particularly, but probably no doubt it was because only 700...
Q Okay. The next mine is Charles Huskon No. 12, which is Mine No. 20.
A Yeah. Yeah, that was a shallow, open pit right by the highway.
Q Bill, can you turn around when you're talking and --
A Oh, I'm sorry. This is number what now?
Q The one you just marked --
A Number 12.
Q Shows 1,779 tons.
A I remember that very distinctly. I made a map. It's a shallow, open pit. Must have been found on the surface by walking over it, it's so shallow.
Q I have another question. Each of the mines you have traced is a different shape. Can you tell me a little bit about how they would draw their

claims when they staked them.

A Now, some of these -- these are all mining permits, not Navajo claims. And it just depends on, I guess, how many acres. They tried to keep the acres as small as they could, because -- but Rare Metals was not limited to the number of acres like some companies were, because they had a mill. If you had a mill, you could have unlimited acres acquired on the reservation. If you didn't have a mill, you could only have 960 total. But since Rare Metals had a mill, they could have as many acres as they needed. And it's probably somebody said, Well, based on our looking at the area, that rectangle there, that's only the acres we need. It just depends. Some of these guys, they would get regular squares here.

Q The next mine is Charles Huskon No. 1. That's Mine No. 29.

A Yeah, it's a very small area.

Q And that was a bigger mine, almost 23 --

A That was -- that was on the side of a hill there, and it was a big rim-stripped area.

Q 23,000 tons.

The next mine is Evans Huskon No. 2.

A Charlie told me that he gave it to his

son. It was his mining permit, but he got it all transferred to his son. That's No. 2, which is, what, 37?

Q 39.

A Oh, 39. Okay.

Q That was a fairly big mine as well.

A Yeah, uh-huh.

Q Almost 12,000 tons.

The next mine is Charles Huskon No. 14. That's Mine No. 49.

A That's a little rinky-dinky pit.

Q It shows --

A A small pit.

Q In your '93 report, it says 46 tons, and it lists Rare Metals, 46 tons. Okay.

The next mine is Charles Huskon No. 3, and that's Mine No. 60.

A Mine 60?

Q 60.

A Yeah, okay. It went off over here somehow, but it was -- it was -- this map shows there's a series of three big pits, and that's a contention I have with some of the Navajos. They said, You don't have enough mines in Cameron. We don't really have mines. We have properties.

That's counted as one property, one mining permit, and yet you've got three pits on it. So that's why our numbers never matched with some of the people at Window Rock.

Q That was a fairly big mine, it looks like.

A Oh, yeah.

Q 27,000.

A It was a big mining permit with three big pits on it.

Q The next mine is Charles Huskon No. 7, and that's No. 71.

A I believe -- I believe -- 71, I think, is over here in this cutoff area. I'm checking, but it seems like -- okay. Okay. What's the next one? I'm going to put 71 question mark.

Q The next mine is Charles Huskon No. 10, and that's No. 76.

A See, it was -- it was a long, narrow mining permit there with three -- with two big open pits on it.

Q The next mine is Charles Huskon No. 8, and that is --

A 79.

Q 78.

A Oh, yeah. Here it is.

Q That was a small mine?
A Yeah.
Q The next mine is Charles Huskon No. 26. That's No. 83.
A Yeah, it's right here. Uh-huh.
Q The next mine is Charles Huskon No. 11. It's 84.
A It's right here.
Q And then the three Ramco mines: Ramco 20, 21, and 22. They are 93, 94, and 95.
A Okay.
Q Can you move just a little and let him see.
A Their mining permit for their big rectangular mining pit is going northeast, northwest, southeast, but that ore trend was going east-west in here.
Q Okay.
A You can see there was many open pits on all the Ramcos.
Q Only a few left. The next one is Charles Huskon 17, and that's No. 105.
A 105. Okay. 105. Oh, here we are.
Q Charles Huskon No. 9 is 119.
A Oh, that's down here. Here. I'll get out

of the way, but I don't know if you can get it, it's so low.

Q Okay. Only three left.

Charles Huskon No. 4 is 138.

A Yeah, that's the big one down here.

Q Okay. Ramco 24 is 147.

A 147.

Q And the last is Section 9, which is 165.

A Section 9. I'll just do the east half of the section.

Q Okay. That's it.

A That was a good way to do this.

Q All right. You can sit down again. That's very helpful.

THE DEPONENT: I don't think you can get this at the bottom, can you?

VIDEOGRAPHER: I did. Thank you.

THE DEPONENT: Oh, you did. Well, I'll get out of the way.

VIDEOGRAPHER: No. I'm already set.

Q (By Mr. Neumann) Now, on Exhibit 65, which is your report --

A Uh-huh.

Q -- and Page 24, the end of that first paragraph, you say: Only the Charles Huskon Nos. 6,

12, and 14 are within the Shinarump Member.

A Uh-huh.

Q And yesterday we discussed that.

A The Shinarump is the geologic unit below the petrified forest member, and it's a harder sandstone than the soft sands in the petrified forest member, both of the Chinle Formation, C-H-I-N-L-E -- L-I -- L-E. C-H-I --

Q Yes.

A Is it E or I at the end?

MR. TAYLOR: E.

THE DEPONENT: E. Okay. Chinle.

Q (By Mr. Neumann) So these were the ones that were likely not rim-stripped.

A Yeah. They're the -- typically the mines in the Shinarump are not as large or productive or higher grade than those in the petrified forest, is what -- what mining finally turned out. Because I know -- I know the Huskon 11 is in the Shinarump and so is Section 9. But I guess they weren't described in this report for some reason.

Q And do you think Section 9 would have been rim-stripped?

A Pardon?

Q Do you think that AEC rim-stripped Section

9?

A No, I don't think so.

Q Okay.

A It wasn't Huskon -- it wasn't Charlie -- I think -- because in early days and what Hinckley said, I think AEC only rim-stripped Charlie's properties. I mean, that's an assumption.

Q In your 1993 report, you mention there were 45,000 linear feet of rim-stripping?

A Yeah.

Q How did they count that number?

A Probably linear feet. Like if they stripped an area from here to here, they would count that number of feet. It would be linear feet, not square feet or anything. That's the way it was counted up at Sanostee that I'm familiar with. When the AEC stripped that, they said there were so many 2,000 square feet. Well, that was linear along the cliff face, and I assume that's what Hinckley did. I don't know.

Q To get the area, then, you would have to look at the width of the --

A Yeah, the linear feet.

Q -- and then multiply it by the width of the bulldozer blade?

A Probably, or maybe you had some caving in. Probably you went along the cliff with a bulldozer. Yeah, that would be the distance, and then the height or all that would be dependent on the caving of the rock, I guess. It's hard to say.

Q Would there have been field notes or some kind of form that reflect the linear feet?

A I don't know. I think -- all I have ever seen is a geologic report. So many linear feet were done in such an area, but -- and Hinckley says 15 -- I think he says 15 different areas were stripped. So he must have added up the footage on each one to get a total number. I don't know. It's too bad that he didn't keep better records.

Q Another way to do it, maybe, would be to look at the surface area of the orebody, I guess.

A I don't really know how you could calculate or how you could determine where this footage was distributed on the different properties.

Q But the goal of the stripping was to expose the entire surface area?

A Yeah.

Q You mentioned yesterday that the AEC geologists would call in the team to do rim-stripping when they thought it was appropriate?

A Yeah. What I would -- I never got involved in that, but I was very close to the rim-stripping in the Sanostee area, S-A-N-O-S-T-E-E. And the geologist looked here and here was mineralization along this cliff, and some of it was covered by overburden that had fallen down, sloughed down, you know, like landslide material. And he made a recommendation to Grand Junction, and I guess somebody said, Okay, we've got a drilling camp there with a bulldozer. Let's just go do that. And then they went in and stripped it. But -- so somebody had to approve it, and I don't know who did. I never got involved in any of that.

Q Do you know who would have approved it for --

A Probably the head of the Exploration Division or Mining Division. It was here in Grand Junction, I'm sure. It wasn't done by the project engineer, because there were bucks involved, dollars involved, so somebody had to approve it.

Q You mentioned Sanostee, and that was our Exhibit 43. You had written a report.

A Yeah, and there was rim-stripping done there.

Q Yes. And do you remember which geologist

would have recommended it to --

A No. It might have been -- it might have been John Blagbrough, because he was the project geologist for many years.

Q What about at Cameron, can you think of who might have recommended the rim-stripping?

A No. That was -- by the time I got to Cameron, they were mining pretty well.

Q Let's talk about the types of inspections that would have happened at mine sites. Can you tell me which agencies or divisions or types of government people had a reason to inspect the Cameron mines?

A Well, there were the feds, the Bureau of Mines people that we've talked about that came out of Denver. And then the tribal mining department, I think, had three or four young mining engineers that were mine inspectors, and they were out there regularly. They traveled all around the reservation. One of them quit the tribe and went to work for the AEC. I don't know why, but -- his name -- I knew him pretty well. And he enjoyed working for the tribe because he got to get out all over, travel all around and not too much paperwork, but he decided to work for the AEC instead.

And then the State had mine inspectors based in Phoenix, and they weren't too welcome on the reservation because the Navajo said, We have our own and we have the feds. We're not -- you don't need to come out and inspect us. So there are very few State mine inspector reports on the reservation mines.

And the State mine inspector in Arizona, like Colorado and New Mexico, has to put out an annual report showing the mines he visited, the number of people involved and all that. And I have looked at all these during the RECA period and they are missing years in there where they never got -- never got on the reservation. Even to the big Kerr-McGee mines, there are no State inspections or blanks in their annual report. So that is a true statement, I guess, that the tribe didn't want them on the land.

Q What about -- you mentioned sometimes the AEC would visit. If someone called for an evaluation, there was a visit?

A Oh, yeah. But that was more -- that was more in prospecting, not mining. If a prospector had something in the early days, the AEC was encouraged to send somebody out to make an

evaluation to help him know what he had, because a lot of these prospectors never had seen uranium before.

Q And I think you mentioned AEC visited as part of the certification programs.

A Oh, yeah. That was -- that -- I'm sorry. If a property was certified and producing, they were visited frequently, maybe every other month or so -- or maybe every month, I think. I forget what the regulations were. But if they were producing, somebody had to go out and say, you know, is the amount of uranium being claimed for bonuses commensurate with the bonus payments made or something like that, which was on these forms we've looked at, you know, no fraudulent involved.

Yeah, that's right. The AEC inspected certified properties until they were paid out and claimed their complete $35,000.

Q And how often do you think the Bureau of Mines, the first one you mentioned, how often would they have visited?

A Like I said, I never heard or saw of any Bureau of Mines people in Cameron. I saw the tribal people. But I think -- I think Kerr-McGee said maybe they came every two months to the Lukachukais.

I don't know. I can't remember exactly, but they weren't there all the time. They came out of Denver and wrote the reports like we have seen here in the files.

Q You mentioned also that Frank McGinley --

A That was the milling people, and that was in the Processing Division. I know they visited the mills with an AEC contract on a monthly basis. And after -- after the exploration was -- projects were completed in 1956 and we got into the so-called production capability stuff, we were supposed to visit each operating company once a month. But that was in visiting the mines.

I would go and talk to Kerr-McGee at Shiprock or Rare Metals at Tuba City. But then all the little Ma and Pa uranium mines, you had to go look those guys up, like Thomas Clani, C-H-L-I -- C-L-I-N-A-I, Clani, and Paul Shorty and those guys. I'd contact them, if I could find them, to see what they were doing. They weren't really doing much, maybe 14 tons a month in a mine or something. But we had to make a report about what the industry was doing.

This was mainly after the -- after the November 24th announcement and things slowed down

considerably on exploration. We were supposed to keep up with that to see if the industry was so-called viable.

Q Do I remember right there was an AEC camp at Cameron as well? Was there trailers and a camp?

A Yeah, I think -- I think in the early days, Hinckley might have had a trailer -- had a trailer there. And then after him, a guy named Irving Gray had a trailer there probably in the Cameron trailer park. And that was their field office.

And then by 1957, they were cutting down on field camps and putting people in towns, and that's why I got sent to Flagstaff. And those guys -- I think they got mad and quit or something. Hinckley went back to school and got a master's thesis at the University of Utah on his work at Cameron, which you probably have a copy of and I have never seen. But Irv Gray, he quit and went to work for a uranium company, I think. But, anyway, they were -- they were the first early geologists in the Cameron area before I got there.

Q So would a lot of AEC employees show up to work at the Cameron mines or how did that work? They had a camp right nearby.

A Well, there was only one guy. When Irv Gray was there, he was there, and he was out studying the mines and making reports on -- reporting the drilling and all that, so there was only one person there. And then when they set the office up, there were three of us, so -- but we had the whole state of Arizona so we were spread pretty thin. But we didn't bother the miners or anything like that.

Q When there was a drilling program, were these people there more often at the site?

A You mean AEC drilling?

Q Yes.

A We didn't all stop when this production capability stopped. But when we were drilling, it wasn't really -- well, let's say on Cove Mesa where we were drilling, VCA was mining in the rims and things. But they were doing their thing mining and we were doing our thing drilling behind the mines.

Q But someone from AEC would be there during each day of the drilling program?

A Yeah, if there was somebody on the drill rig, all the -- every time they -- if a drill was working, there was an AEC guy there because they were parked at the bottom of the hole and there

would be a -- and the logging truck was there also, so there was always somebody around the drill because -- to log the cuttings and all that. But we didn't bother the miners. Maybe -- even the small miners got bothered once a month. Or you couldn't find them. Like Paul Shorty, he had a mine, but you could never find him. You talk to his miners, Well, we might get a few tons this week.

Q Is that all the AEC geologists would do, is watch the drilling or would there be other interaction at the sites?

A Oh, yeah. We -- well, on the drilling projects, people were assigned to drilling projects. And during the drilling projects, which ended in '56, there really wasn't -- the Mining Division people were out there making certified visits on certified properties and all that. And then when the drilling stopped, things kind of changed, and field offices were established all around. And the geology staff took over much of the mine visits there, at least that's what happened in Cameron.

Q And how did AEC share the results of its drilling with the mine operator?

A Well, we really never -- in the Lukachukais, it's hard to drill without getting on

Kerr-McGee leases. And I think -- I can't tell you how that was done, because I left the area. On the Cove Mesa, we did share that drilling with the leaseholder, VCA, and then we also sent stuff to Grand Junction and they were supposed to send it down to Window Rock. That was our agreement with the mining department that we would share -- after a drilling project was completed, they were to send Window Rock a drill-hole map and geologic logs of all the drill holes. I don't know if that took place. It was supposed to have taken place, and I know Window Rock got some of our drilling, but who knows.

Q So at Cove Mesa, you mentioned VCA was mining at the time you were drilling?

A Uh-huh. They were mining along the rim. See, Cove Mesa was a government lease. It had been -- it had been leased from the Navajos by a civilian company that was doing geologic work for the Manhattan District, so when the Manhattan District became AEC, AEC acquired the Cove Mesa lease. That's the only thing on the reservation the government ever controlled as a lease.

And so AEC actually leased it and basically owned it for a while, and so we drilled it

to develop reserves on our lease, and VCA was awarded the contract to mine that. So it was sort of a different situation there that it was a government lease and AEC was drilling ore out of that for VCA to mine. It was a very different situation.

VIDEOGRAPHER: The time is approximately 2:37, and we're off the record.

(Off the record.)

VIDEOGRAPHER: The time is approximately 2:38, and we're on the record.

Q (By Mr. Neumann) Bill, do I remember right that at one point, the office you were in had responsibility for the area that included the San Mateo mine?

A No. I was -- when I got transferred to Grants in 1961, I think it was, I still had -- I alone had responsibility for all of Arizona again, and there was still mining going on in the Lukis and the Carrizos and Cameron, and I think that was it. And I used to have to make a monthly trip over Arizona to check on what was going on. And I had very little involvement in Ambrosia Lake, but because I was there, I helped out on a few projects and learned the area.

Q And did you know your counterpart who had that responsibility for San Mateo?

A No, huh-uh. I don't know.

Q We just talked about a lot of different kinds of inspections that occurred in the Cameron area.

A Uh-huh.

Q Do you think similar inspections occurred in the Grants District and in San Mateo?

A Well, I know -- you look at the New Mexico Mine Inspector reports -- because the early days at Ambrosia Lake, the sandstone was full of water and very soft and was always caving and they were having mine accidents. And so the federal inspectors were really after them to do a lot of timbering and things like this, and it did cut down on the mine accidents.

But yet, the feds -- you read those annual reports from the New Mexico Bureau of Mines, they were out there at Ambrosia Lake quite a bit. But I can't tell you anything about San Mateo, except I have been by it a few times afterwards.

Q Can you think of another instance where AEC performed drilling and there was an operator mining at the same time?

A Not nearby. I think the nearest I can remember nearby would be on Cove Mesa with the government lease. Now, the drilling we did on King Tutt Mesa -- is that where -- there were those few mines. King Tutt Mesa is this big mesa here. There were some uranium mines on the rim and we were drilling back here. And we found that one of the ore trends from this mine here went through the mesa, and there were a couple big mines developed on that ore trend that we found. But we weren't really drilling up behind the mine; we were drilling, oh, several hundred -- maybe even 200 yards, 200 feet, behind it or something.

Q Yesterday we talked --

A And that was -- that was really part of the program, to find new -- more ore as fast as we could. But as the program slowed down, we didn't do that. We drilled more in wildcatting type of drilling to find new areas.

Q Why did you want to find the ore as fast as you could?

A That was the AEC program. In the beginning of the program, the thing was get uranium found and milled and into yellowcake for the Cold War as fast as you could. That was the whole urge.

Q Yesterday we talked about a drilling program at East Carrizo, and the report, which is Exhibit 17, mentioned that VCA and Climax were nearby. And do you recall the interaction between the AEC drilling and VCA, for instance?

A No, no. I should say VCA didn't like to spend money drilling, so we did drill closer to their mines than other people's mines. But it wasn't -- because in the beginning, we drilled within 50 feet of some of these old mines, hoping we would find the extension for them, because, as I say, VCA said, Well, you guys can drill, we don't want to, and so we did.

Q Were you hoping that if you found ore, they would come and mine?

A Oh, yeah. And they did. This was over in the Rattlesnake area in the Northwest Carrizos. We found them quite a bit of ore drilling on their leases -- not a lot, but we found quite -- we got them to have the ability to open up some old mines because we found ore behind their mine.

That's described in my Bollin and my and Maise's report on the Rattlesnake drilling project, how we drilled behind the mines and found some ore.

Q How was the decision made to drill there?

Did the operator ask for that help or did AEC --

A Oh, they sort of wanted -- VCA kind of asked for drilling. The other people were just happy we did. Somebody -- I don't think we ever refused to drill behind a mine. But this was in the very beginning. Then as the industry got bigger and drilling techniques got better and there were drilling companies available to drill for people, the AEC stuff got phased out every year. And as I remember, the last drilling we did was in the Lukachukais, and somebody said, That could be because Senator Kerr was on the committee back in -- that was a joke we had.

Q I recall seeing in some of the reports that one way to predict where to look for uranium was to assess the metal content of the soil or the layer.

A Oh, that was tried -- that was something that USGS tried, and it did work for a shallow deposit. They could sample -- well, certain plants absorb selenium and other things. And if you can find a group of selenium-bearing plants, selenium was associated with uranium, and that was a good indicator. That was geobotanical prospecting on shallow deposits down at Grants that worked pretty

well.

Q What kind of levels of metals like selenium --

A I don't know. But these -- this locoweed, astragalus -- I can't spell it. That's the generic name for locoweed. It was a selenium absorber, and if you could see big clumps of astragalus, you're pretty sure there's some uranium underneath it because uranium and selenium were -- selenium was associated with many uranium ores.

Q Another metal I saw was molybdenum.

A Oh, yeah. That was -- some of the Cameron ores did have molybdenum in them, and that created problems at the mill. The Huskon 11, I remember they said the mill hated it because it was full of selenium and that would screw up their recovery circuit. And in a report on the -- I think Columbia University did on the Cameron area, mineralogy in the Cameron area, they noted that was a very unusual accumulation of molybdenum in that uranium ore there, on Huskon 11.

Q At the Cameron mines, then, if those metals were found, I gather, during the rim-stripping, you would be pushing overburden that had those metals in it?

A Oh, sure. They would get out in the soil and rain would wash it away. I'm sure that rim-stripping stuff that was pushed off laid there and weathered and who knows what happened to the metals in there.

Q I want to ask a question about the Union Mine Development --

A Okay.

Q -- Corporation. And yesterday we looked at a report that you co-authored on drilling and geologic studies in the Northwest Carrizo area. The easiest way, I think, to ask the question is: In the reference section, there are two reports that appear to recount studies done by Union Mine Development Corporation.

Are you familiar with the work there?

A Oh, yes.

Q Can you describe first for me: What was the Union Mines Development Corporation?

A Well, Union Mines was a civilian contractor, the Manhattan Engineer District -- the Army went to Union Carbide, who was already out here buying -- processing mill tailings and getting uranium out of the mill tailings and all that. And the Army went to Union Carbide and said, You're

already involved in uranium procurement for us. We need to have some geologists do a uranium resource assessment program, and they -- anyway, they coaxed Union Carbide into doing this.

So Union -- Union Mines was formed in New York City, and they went out to universities recruiting young geologists to work for them. And the idea was they'd give them a draft deferment. They wouldn't have to get drafted in World War II if they did this geologic work for the Army Corps of Engineers. And they recruited people all over the country, and they formed -- they had a field office here in Grand Junction in the First National Bank building. And I know this because all the Union Mines geologists joined the AEC afterwards.

And, also, the Army wrote a big report about what Union Mines did. And they went out and studied the whole areas where uranium had been reported in the literature. And down on the reservation, they studied the Carrizo Mountains in quite detail. And they went out and mapped -- walked the rim, had very primitive Geiger counters, and they mapped the rim and reported where on the rims they found radioactive material, and they got into the mines and they mapped the mines. And they

made these great big, nice maps showing what they found and where they recommended drilling could find uranium resources. And we used these maps in the AEC on some of our first drilling projects in the Carrizo Mountains.

And they took -- they took samples and they combined all this and they issued a report at the end of how much uranium they thought a good exploration program would develop in the Carrizo Mountains, and I forget what the number was. And then they said an additional so many tons could be found based on geologic projections.

And, anyway, they laid the fieldwork -- they laid the foundation -- first of all, the Army said, No, we are not going to do any drilling. I guess they -- we just wanted you to get the basic information. And that all was turned over to the AEC, and that was the foundation -- Union Mine's work was the -- in the Four Corners area was the foundation of the AEC Exploration Division.

Those first drilling projects we did in Western Colorado and Northeastern Arizona were all based on Union Mine's geologic studies, so they really laid the foundation for the AEC exploration. And they wrote fantastic reports, drew fantastic

maps, and...

Q Do you know, are those reports available somewhere?

A Yes, I do, because there was a screwup in the government. They had them in the library down here, the site, and they didn't know what to do with them. And some administrator says, Oh, let's give them to the Mesa State library. And Mesa State said, We'll take them. Then one of the administrators says, Hey, you broke the law. These are federal records. The National Archives get first crack at them. Well, they had a big hassle and they ended up -- the museum still has them. And they have these big flat map clamps of all the Union Mines maps and file folders of all these Union Mines reports. It's a fantastic bunch of work that Union Mines did.

Q This is at a museum?

A The Museum of Western Colorado. They're in the Lloyd Files Research Library, because I have used them quite a bit.

Q I believe there were also notes about the Union Mines effort at -- let's see -- were they at Cove and East Mesa as well?

A No, they -- what?

Q Were they at Cove and East Mesa as well?

A They were on Cove Mesa and East Mesa, but they never got in the Lukachukais because they got snowed out.

Q Do you recall anywhere else they were? Were they at Cameron?

A No. The only -- oh, yes. Because U.S. Vanadium, who was training these guys, they were only interested in the salt wash member of the Morrison, and that's where the uranium at Uravan's found. And they weren't interested -- and these were the Jurassic age rocks. They weren't interested in any other formation but the Morrison. And so Cameron's in Triassic age rocks, older rocks.

They ignored all Monument Valley, anything -- White Canyon, anything where -- anything where uranium had been reported in the Chinle Formation, they ignored that for some reason, mainly because the guys that trained the Union Mines guys weren't familiar with these areas. And so they only evaluated the Morrison Formation.

And besides that, they looked in the literature -- Union Mines looked in the literature and they saw where uranium had been reported in some of the copper mines in Southern Arizona and copper

mining in New Mexico, and they went out and looked at these areas. But this was all done looking for vanadium, because they didn't want to use the word "uranium" and get everybody wondering what was going on. And a guy named John Harshbarger did an excellent job in the Carrizo Mountains summarizing all this.

Is he your reference there? Probably so.

Q Yes. Harshbarger.

A Yeah, he -- I think -- he estimated from all the sampling and all the geologic notes how much uranium he thought could be produced in the Carrizo Mountains, and he came, I think, pretty close in the end, which was surprising.

Q Okay.

THE DEPONENT: That's H-A -- H-A-R -- Harsh, H-A-R-S-H-B-A-R-G-E-R, Harshbarger.

Q (By Mr. Neumann) I'd like to ask a few questions now about the Grand Junction pilot mill. You shared with us a copy of Mr. Merritt's text, and it had a summary of all the mills.

A All the mills.

Q And he explained -- I'm looking at Exhibit 39, Page 14. I can just read you -- it's short. But that one of the most important contributions of

the pilot plant program was in training of technical personnel.

A Uh-huh.

Q And I think we saw a few other documents say something similar, that the -- some of the employees from the mining -- or the milling company would come to Grand Junction to learn how the mill operated?

A I guess, but also some of these guys left the contractor to go work for private industry. I don't know -- I don't know -- I don't really know anything about a training program. I knew they had a turnover of employees going into the industry. That's maybe what he means. I really can't tell you.

Q So you're saying the AEC had a contractor to operate the mill in Grand Junction.

A Yeah, it was done by Gallagher and then National Led.

Q And employees of National Led or Gallagher might have left to join mining companies.

A Yeah. Like there was a guy here -- a man here in town named Bob Beverly, a metallurgist, he came out here to work for National Led, and in a few years he went to work for Union Carbide as a

metallurgist. That's typical of what, I think, they mean there, but I'm not sure.

Q Yesterday, we talked about Frank McGinley's report on Grand Junction, and in it there was a chart showing all of the different ore that came through the pilot plant.

A Uh-huh.

Q The one I'm looking at -- I don't think you need to look, but just for everyone else, is Exhibit 48, Page 14. For instance, it suggests Arrowhead ore from Cameron --

A Yeah.

Q -- came to the Grand Junction mill in March of 1955. It looks like about 320 tons.

A Yeah.

Q Did you have an understanding of whether these ore shipments were used to fine-tune or train people on the specific mills?

A Yeah. That was the whole purpose of the pilot plant, was this is a brand-new discovery, of course. So they did all these tests and ran it through and probably told Rare Metals, well, we think this type of circuit with these chemicals would be the best circuit to use to get your maximum recovery. And then they ran it through the pilot

plant and made yellowcake down there, and I don't know how they paid for that or what happened to that deal. But that was common practice.

And then they wrote a separate report. I have seen this report, I think, someplace in -- maybe down at the compound. They had -- they're called WIN reports, W-I-N, prefix, No. 1 through 300 or something. And most of them are at the Mesa -- Colorado Mesa University library now. But they would recommend to the company what the best process was to recover the uranium at a new mill or something.

Q In looking at the pictures and diagrams of the Grand Junction compound and the pilot mill, it looked fairly authentic in the sense that it had a tailings pile and ponds.

A Oh, yeah. They had a tailings pile down there, and one year, when the Gunnison River was flooding, they used the tailings pile to build a dike, which caused contamination in later years. The Gunnison River was coming in, so they said, Well, this is the best material, so they scooped up the tailings and built the dike along the Gunnison River to keep the facility from flooding.

Q Do you know whether one part of the

training at the pilot mill would be to teach people how -- how to use a tailings pile or those ponds?

A They had two circuits down there, if I remember -- well, I don't know. But it seems like they had both an alkaline circuit using alkaline leach, and they had an acid circuit, because that was the two basic things they had then. And they had both circuits down there, and they put the tailings out -- in that one photo -- that one artist's drawing, they did put the tailings out in the tailings pond down there. But that's all been cleaned up. That part of the site down there has been turned over to the River View Technology -- is that -- Corporation.

Q Were you familiar at all with the -- at the mills, for instance, the Tuba City Mill, when they decommissioned and stabilized --

A Huh-uh.

Q -- you didn't know any of those --

A No. I was long gone. I've read a Bureau of Mines report about the tailings that were blowing off the site there someplace. That's the only thing I've ever read about that.

Q I was going to ask if you knew whether Grand Junction experimented at all with tailings

stabilization.

A Not to my knowledge.

Q I can't remember if we discussed this, but I saw in a report -- let's see -- Exhibit 47, which is entitled: A Summary History of the Activities of the Grand Junction Office.

A Oh, that was that report the three of us wrote for a great big reunion we had for all the former federal employees.

Q And there was mention in exhibit -- or Appendix A at Page 9 that the Monticello plant was the only AEC-owned ore-processing operation and served the useful purposes of stimulating uranium ore production in the area, providing processing and cost data for the AEC to use in contract negotiation --

A Uh-huh.

Q -- and providing personnel and facilities for testing ore-processing modifications, health and safety practices, and environmental measures.

Are you --

A Frank McGinley wrote that, and I know they did do some work down there, if I remember right, that they did some work on tailings stabilization projects for many years. It's all gone now. The

tailings have been picked up and moved into a regular disposal cell, but because the mill was right there in town, they were experimenting -- I read or heard about things that cut down wind-blowing contamination, things like that. But that was Frank McGinley's part. I don't know.

Q And one of the reasons for that experimenting would have been to share with other --

A Oh, yeah.

Q -- mill operators?

A Uh-huh.

Q You mentioned, I think, you were in Salt Lake City for a meeting on some Tuba City related issues, maybe having to do with the mill. Do you remember telling us that?

A No.

Q Where you might have met Mr. Kline and others.

A No. The reason I used to -- well, after that one man died, McKinney died down at Cameron, I used to go up to the mill site once a month to talk to Mr. Runke about what was going on, just general information about where he was getting new ore from for the mill, how much drilling they were doing and all that. That's about my only -- is going to his

office at the mill. It wasn't every month. Maybe it was every other month or something, because...

Q Do you know how AEC might have used the processing and cost data from Monticello?

A They might have said, Well, we figure it's going to cost so much to process this much ore, and this would be when they would be renegotiating milling contracts trying to get a better deal for their buck. Maybe they were using -- using some of the cost data, saying, Well, we figure it's going to be -- cost this much to do this process and you are charging us twice as much or something.

Because every time they would renegotiate a contract, it was all done on -- like we talked about, to give -- to give the AEC a good price and also give that industry a reasonable profit, you know. So they were always negotiating milling contracts to do this, not all the time, but a milling contract would come up for expiration, they'd renegotiate it, and then the AEC would want to get a better price and still have the company make a fair profit. We talked about that yesterday, I think.

Q And Mr. McGinley was one of the metallurgists who visited --

A He was the chief metallurgist for the AEC. He had a staff of maybe eight working for him that would visit all the mills every month.

Q And would he use information like this on cost or process to sort of manage what was going on --

A That would be when they -- when they renegotiate the contracts.

Q Were they just observing in their monthly visits?

A Oh, they'd walk around and, actually, I've never -- I've briefly seen one of the reports, and they actually would make safety recommendations. We noticed this; this ought to be corrected. Because, actually, the mills -- as he writes -- were contractors to the AEC. You always see that -- when he writes about another contractor did this and this and this, he's talking about the milling company.

Q You mentioned -- yesterday, we discussed briefly the San Mateo Mine and the role Mr. Ingles, I-N-G-L-E-S, Gay played there, that there was an industry liaison program?

A Pardon?

Q You said there was an industry liaison program?

A Yeah. That was -- that was when -- we all were doing that. Tried to keep Grand Junction informed of what was going on out in the industry, all around. And he did the ones for Grants. He'd visit -- he'd visit each major company at Ambrosia, which weren't that many, what was going on. And I know he -- and then eventually he wrote this all down on his calendar and this became that report we talked about yesterday. So I know he visited San Mateo quite frequently -- not quite frequently, maybe every two months or so, just to find out what was going on and when they had problems. Didn't the shaft cave in on them one -- yeah.

Q Yeah. Was his role mainly to observe or did he have another role in communicating with --

A No. Observe and report.

MR. NEUMANN: Why don't we take a break to change the tape.

VIDEOGRAPHER: The time is approximately 3:06. This is the end of Tape No. 10 in the deposition of William Chenoweth. We are going off the record to change tapes.

(Recess taken.)

(Exhibits 123 through 127 were marked.)

VIDEOGRAPHER: We're on the record.

This is Tape No. 11 in the deposition of Mr. William Chenoweth. The time is approximately 3:18.

EXAMINATION

BY MS. KANE:

Q Hi, Mr. Chenoweth. I just have a few questions for you.

I'm going to hand you a couple of exhibits and I would like you to just go ahead and take a look through. I'm going to hand you first Exhibit 123.

Have you had a chance to look through that?

A Can you speak up a little bit --

Q Sure.

A -- so I can hear you better.

Q Have you had a chance to look through that book before or a copy of that book before?

A Not this particular book, but I'm familiar with all these five items listed here.

Q Okay. And are those the five items that are listed there in that notebook? If you want to take a minute to flip through it.

A No. I'm familiar with -- yeah, without a library number here, I had to think a little bit about this No. 3. But I am -- yes, I am familiar

with all these. We talked about No. 4 yesterday, I know.

Q And the other reports that are in there, are those reports that you did?

A I'm a co-author on No. 1 and No. 3.

Q Okay. And what about the others in there?

A I'm the single author on those.

Q Okay. So you recognize those. Those are ones that you wrote?

A Yes, that I wrote.

Q Can you tell me a little bit about why you wrote them?

A Well, let's see. No. 1 is a memoir -- not a memoir. I guess you could call it a memoir of the New Mexico Bureau of Mines and Mineral Resources. And it has an article in there on the -- that I wrote with, I think, Harlen Holen on sort of the mining -- I better look it up. See what I'm...

Yeah. This is an article a co-geologist and myself wrote about the history of Ambrosia Lake since 1963 when -- there was a previous history that we wrote. So this is a historical summary of the Grants area from 1963 through 1983 -- 1979, I'm sorry. Yeah, '79.

Q Did you write that report -- what caused

you to write the report?

A The editor of the -- this memoir -- it was called memoir -- I'll give you the name of it. Well, here, it's Memoir 38, New Mexico Bureau of Mines and Mineral Resources. It's called Geology and Mineral Technology of the Grants Uranium Region. The editor, Mr. Rautman, R-A-U-T-M-A-N, came to the AEC and said, Can you write us up a history. And Harlen and I said, Sure, we can. So my co-author is Harlen Holen, H-A-R-L-E-N, H-O-L-E-N, Holen.

Q And how about the next report in there?

A The next one is a report that I did for the New Mexico Bureau of Mines, mainly because the Sanostee area is one of the few areas on the reservation, Navajo Reservation, that produced after the AEC program. And I was able to get some -- New Mexico had some state information. I was able to get some information from DOE to fill in the gaps of what happened after the AEC program.

Q Okay. How about the next report?

A Tab 3 is -- oh, this is -- this is the compilation that Virginia McLemore, M-C, capital L-E-M-O-R-E, and I compiled in 1991. She had gone around -- she was with the New Mexico Bureau of Mines, a uranium commodity person. She had gone

around to the companies getting mining maps and things of the companies that were going out of business. They were very cooperative. And I had gotten some data from people I knew.

And, anyway, we put this together. It's a map showing the mine locations from Gallup clear over to Laguna and where the head frames are and where a company gave us data on where they'd mined out areas. So it was a compilation of what we knew about where the mines were and where no orebodies had been mined as of 1991.

Q And how about the next one, the Geology and Leasing and Production History of King Tutt --

A Well, that is the result of VCA, Vanadium Corporation of America, giving -- letting me go down to their office in Naturita and trace an outline of their mines on that particular Navajo lease. So I did that, and Ginger McLemore says, Well, write up a text to go with it because the AEC found some of the ore for VCA on that lease.

Q And how about the last one there, Geology --

A That's -- that's another thing, because in our compilation of data on uranium in New Mexico, we were having problems with a Navajo named Hosteen,

H-O-S-T-E-E-N, Setah, S-E-T-A-H, Vegay, V-E-G-A-Y, where his mining permits were and where he produced -- he had a little mining company where he produced ore, because he had two Canyon View mines and he had two Red Rock mines. Anyway, it was all screwed up in the AEC records.

So Ginger says to me, Well, why don't you go to your records and maybe get -- look into your old Window Rock records and see what you can figure out. So I did this and we figured out, in talking to VCA, we got -- we think we got it straightened out where Mr. Vegay's mines were -- where his mining company operated. That's really to straighten out the records.

Q And, Bill, was that done for New Mexico Bureau --

A New Mexico Bureau of Mines.

Q Now, were all of these done for New Mexico Bureau of Mines?

A Yes, they were.

Q Okay.

A Yes, they were.

Q All right. You can put that one aside.

I'm going to hand you Exhibit 124. It says Arizona on the front cover. Can you just take

a quick look. There's more in there than there was in the New Mexico binder, so...

A Okay.

Q I'm not necessarily going to ask you to go through all of them, but if you could take a look. Were those -- were all of these done for the Arizona Geologic Society for their project that they asked you to work on?

A I think -- I think the first one, Tab 1, had to deal with -- these were -- Nos. 1 and 2 were an outgrowth of an AEC open-file map showing mine locations but no production records to go with the mine locations. And No. 1 was done for the New Mexico Bureau of Mines because it's basically the mines in the Eastern Carrizo Mountains; whereas No. 2 here is the mines clear over in Apache County, so...

Q So just to clarify for the record, when we say Tab 1, we are referring to US_CHEN_00001769 to 1797, and then Tab 2 is US_CHEN_1798 to 1836. Okay.

Bill, looking at the rest of -- the rest --

A All of the rest of these were done for -- let me see. I've got to look up Tab 6. Wait. I'm going to have to go through these.

Q Okay. That's all right --
A No. 2 is on the Manhattan Project in Arizona -- excuse me. No. 3 is a -- No. 3 is a report on the Manhattan Project in Arizona. No. 4 is a report on the deposits in the Lukachukai Mountains. No. 5 is a report on the Morale Mine, M-O-R-A-L-E, mine.
Q Bill, let me stop you there.
A And these were all -- all -- those three were all done for the New Mexico Bureau of Mines -- I mean -- excuse me -- Arizona Geological Survey.
Q And why were they done for the Arizona Geological Survey?
A The Lukachukai report was done as a result of an open-file map that AEC put out earlier. It gave more detail than the map did about the uranium mining production. The Manhattan Project, they -- there were -- people in Arizona had heard about what -- the Union Mines projects in Arizona, and they wanted more data on it for their records. In fact, I think they had some Union Mines maps.
Now, 6...
Q No. 6 is Vanadium Mining in Carrizo Mountains, US_CHEN_1943 to 1978.
A Let's see. Here's the Lukachukai and

here's the Morale Mine. Uranium. Oh, I see. I'm counting the wrong way.

Vanadium -- No. 6 is Vanadium Mining in the Carrizo Mountains. That was done for the New Mexico Bureau of Mines, because they knew that as a result of the lawsuit, I had some data on vanadium production in the 1940s and which the Navajo Nation wanted the uranium paid for that was recovered out of that ore. So, anyway, that was New Mexico Bureau of Mines.

Q Okay.

A Number...

Q How about No. 7 --

A No. 6, that was done for the Arizona Bureau of Mines, mainly because the AEC drilled that property and they didn't have any -- it was small, unknown AEC drilling projects and they wanted data on it for their records.

Q And which one was --

A That would be No. 7.

Q Okay. The Geology and Production History of Bluestone --

A Bluestone, yeah.

No. 8 is the uranium-vanadium deposits in Monument Valley, San Juan County, Utah. That was

done under contract. I got a -- I bid on a contract to do research for the Arizona -- for the Utah Geological Survey, and this is a result of part of that contract.

And No. 9 is Harvey Blackwater 1, 3, and 4 mines. There was confusion in the literature where 1, 3, and 4 were. And Arizona says, Well, go to the certification reports so we get this straightened out for our records, because Scarborough was even having trouble in his report trying to figure out where these mines were.

Q So this was done for Arizona as well?

A Arizona Geological Survey.

Now, where are the rest of these? Oh, is there another page?

Q Yep, there's another page. The next tab, so Tab No. 10.

A No. 10 is the Firelight No. 6 Mine. That was done for the Arizona Geological Survey because it has an alias with a Navajo name and they wanted to get that in their records, where it was.

No. 11 is the Cameron deposit we have been talking about all day and yesterday. That was done as a result of an AEC map that they wanted text to go with.

Q And that's the August 1993 report, right?
A Huh?
Q That's the August 1993 report, right?
A Yeah.
Q Okay.
A And -- let's see. I've got to see what 12 -- 12 is the Oak Springs Mines -- Mines. And I don't know who that was done for. That was done for the Arizona Geological Survey, because they had a map -- VCA got them a map of these mines and they wanted a text to go with it. The Arizona Geological Survey, mainly Bob Scarborough, went to VCA and he got copies of all their maps on the Navajo Reservation in Arizona. And then he left the Survey and then I -- they asked me if I could write a text to go with the maps.

And the Tab No. 13 is the Monument No. 2 site. That is a report that Arizona requested because they knew -- they had a picture of the old upgrader and they had some stuff from Frank McGinley about the upgrader. They said, Put it all together in a report for us. And it was -- so that was something I did as a freebie for them, just to get -- just to get the record straight.

And the last report is a draft report.

There should be "draft" up here. It's a summary that I had put together of the mining in Monument Valley in the Navajo and Apache Counties, Arizona. And it's mostly production statistics and mining contractors and all that, and the Arizona Geological Survey decided they didn't want it. So I said how about the Arizona Department of Mines and Mineral Resources, and they were going to take it but then they got disbanded because of lack of funds.

So this report is kind of in limbo. It's never been released to the public. But I had it in my library when Chris was looking for things. I said take it because someday it's going to get released to the public, I hope. Because it's a very good summary, I think, of what happened in those two counties, because no place else has the production and history of the Monument Valley District in Arizona been documented.

Q Since it's a draft, let me, just for the record, put the Bates number on. So it's US_CHEN_00002142 to 2162. Thanks, Bill.

A It's called Summary of Uranium-Vanadium Ore Production, 1947 to 1969, Monument Valley District, Apache and Navajo Counties, Arizona.

Q Okay. Bill, I have just got two more, and

they are actually just Book 1 and Book 2 of the AEC production records, Exhibits 125 and 126.

A Okay. Now, these are -- these are sheets out of big computer sheets, great big computer sheets like this, done by an ancient computer from sometime where they compile -- oh, no. Excuse me. Excuse me.

I'm reading the title. These are pages of the so-called Shoebox Report. The Shoebox Report is a term we used for some AEC ore production records that were long lost and found in a shoebox in the archives. And it's a summary, like it says here, of AEC ore production from 1948 to 1970. It's sorted by -- total by mine within county, within state. And this is -- this is really the most complete -- if you want to go see how much a certain mine produced, you go right here. You don't have to look it up year by year in the early records I thought we had here.

Q So, Bill, how did AEC keep those records to make the Shoebox Report?

A Well, they had to -- the annual ore production records, which that's what I thought we were going to look at, these are in great big books like this. That was the standard we had for many

years. Then they had people and money, and they took and computerized all that stuff out of those big sheets, and that's how this report existed.

And I never knew about this until, oh, several -- a few years ago, because when I was doing stuff for the RECA program, I was having to go year by year and add things up and it was really time-consuming. This has all got it done in here. If I had known about this, it would have saved the government a lot of money.

But, anyway, this is a computer tabulation of the annual reports that were in the big books for many years, and the tabulation was done about 1980, maybe. It was done very late in the game, and nobody seemed to know about it until a few years ago when they found this shoebox full of stuff. That was the common name we called it.

Q Bill, when you say the information that was in the big sheets --

A Huh?

Q When you say the information that was in the big sheets, what kind of information was that?

A It was the same thing, except it was -- a mine was listed individually for that year. They were year-by-year sheets.

Q Okay. I'm going to show you, just for completeness, I think this is the second part of this book.

A Yeah. Apparently there were two -- there are two -- two books, and they break down at -- let's see. Also, this has got the codes in the front.

Q What do the codes -- what do the codes tell us?

A For each entry here, there are all kinds of codes. There's a property code, a company code -- an operator -- I mean a controller code, and then codes for the location and also a code for the state and the county. We can go over that if you want to, but...

Q Yes. Let me show you this. Just hang on to that one.

A Okay. Hang on to this one.

Q This is Exhibit 126, and it says AEC Production Book 2 on the cover.

A This is Book 2. It goes from Long Ridge Mine through the 30-30 Mine.

Q Okay.

A It's just a continuation of this, of Book -- Book 1.

Q Okay.

A It's the same thing. There are -- for each property, there's a number up here, and I know -- like Kerr-McGee was given a certain number, so if they wanted to know what Kerr-McGee produced, they could run that number through their computer and print it all out. If you wanted to see all the production from Monument No. 2, it had a code number and you could run that and -- or you could sort it by state and county. Or there's this location code here. You could sort it all by Ambrosia Lake or all by Monument Valley. Anyway, it was coded mainly for that purpose, but I don't know if that was ever used.

Q So then let's do this. Can you look at Book No. 1. You can put Book 2 down on the floor or wherever it's convenient.

A No. 1.

Q Let's go to 1, and can we go to Page 2300. Okay. So four zeros in the front, 2300.

A 23 -- oh, that's way back in the back, 23...

Q 2300.

A 230 you mean --

Q 00002300.

A I only have 230. 230.
Q Okay.
A Oh, I see. You're looking at the bottom.
Q Sorry.
VIDEOGRAPHER: The time is 3:40, and we're off the record.
(Off the record.)
VIDEOGRAPHER: The time is approximately 3:42, and we're on the record.
A I have been given Book No. 1 of this series, and we're looking at Page 2300. And Kate has said take A & B 2 as an example. That's the name of the mine.
Q (By Ms. Kane) That's the third line up from the bottom, right? And so A & B 2, right, that's --
A That's the fourth entry.
Q Okay.
A And underneath it says 1954. That means in that year, when you look across, the mine shipped 121 tons -- .90 tons containing 679.70 pounds of uranium with an average grade of .28. And at the same time, it says that 121.9 tons were assayed for vanadium, and the vanadium content was 318.74 tons, which averaged -- pounds, excuse me -- 318.74 pounds

of vanadium oxide, which averaged .13.

Q And, Bill, do you see that number there that's on the same line that says 000900?

A Yeah.

Q What is that?

A Well, the first number over here, 0090, that's a number assigned to A & B Mining Company. Every mine that A & B Mining Company mined in every year is coded with that name -- number. Then the next number over here is 001120. That is the number given to the mine number A & B No. 2. Then the next number, 080210, that's the location code, and I have to go back to the front, but my guess is 08 is Colorado Plateau, 20 is Low Colorado District, and 10 is the Cameron locality.

Q How about that last number, 02?

A And then the last number, 02, refers to Arizona, 003 refers to Coconino County. So everything is coded here. As I remember, they were going to do this so they could say, How much uranium was produced in Coconino County, and they could refer to that number. But I never heard of this program working.

Q Okay. And so every -- every mining company would have had this --

A Every mining company had its code number.
Q Okay.
A And every mine had its code.
Q Okay.
A And then they added these other codes for sorting purposes, and I don't remember...
Q All right.
A But this so-called shoebox, it's the easiest way to get -- say you want the production from -- well, here it is -- A & B No. 3. They produced in three different years -- two different years, and there's the yearly total, the combined total for those two years.
Q And all of this was based on records that AEC kept in the regular course of business?
A Yes. And at one time, I thought those big, long computer sheets had been put in the National Archives. I was told that. Well, when the EPA started searching for those records, they couldn't find them. And we had a meeting at the compound, and those sheets never got sent to the Archives and the Shoebox stuff has never been sent to the Archives, and it still hasn't.
I talked to Jeff the other day, and he says, not yet. So this is really -- even though

they let me use this on my report because everybody said, Oh, it's in the National Archives -- it wasn't there. So in my report, I reference ore production records, National Archives. That's an error. I should put unpublished AEC records, but I did this with good thought that it was in the National Archives. Because some people said you shouldn't do that. Well...

Q And, Bill, when you say the mining companies, would those be considered -- I have seen the term "controller" before.

A Oh, yeah. Up at the top here in the beginning of the book where the company is listed -- how many -- anyway, I think it says this at the top of the book.

Q And you're in Book 1?

A Yeah. It does...

I know that in the annual reports, there's not even -- anyway, on the annual reports, above the mining company name, it says controller. And I always thought that meant the person that was operating the mine. Then when I got involved in the RECA program, Radiation Exposure Compensation Act, and they were getting claims in from so-and-so and he said, Well, I worked at this mine for so-and-so,

and you looked in the AEC records and that company wasn't operating that mine from the AEC records.

And we got further involved in this, and then I went back and talked to, I think, Jeff Tack, the records manager at DOE, T-A-C-K, and he says, Well, it says controller on these sheets. That means -- that means the guy that got paid for the ore, I've been told, and I said, That makes sense.

And then I talked to other people and they said, Yeah, the names in these AEC records are called controller. That means the person that received the money from -- that got paid for the ore, and not the one that actually operated the mine. Because many companies, such as Union Carbide, they had 60 mines out here on the Colorado Plateau, and you look in the mine inspector reports, only six of those were operated by company personal and the rest were by contractors.

So for the RECA program, I had to go through the mine inspector reports and get contractors for a lot of these mines, which was kind of a big job. But in all of my reports, I called these shippers and that's really not -- most of those on the reservation were -- were the actual operators. But some of the Kerr-McGee mines in the

Lukis had contractors. And VCA used Navajo contractors on a lot of their mines, because they didn't have to pay as much royalty if they employed Navajos than if they did company people. Anyway, there was something about that.

So in these records that we're talking about today, whenever you see the name, that is the person that got paid, not -- that does not infer the person that actually mined the ore and shipped it.

Q But the people that owned the mine and shipped it would have been working for those controllers.

A Oh, yeah. Like a lot of these people, a lot of these small mines, the person that got paid was actually the company operating the mines. But in some of the big companies, especially at -- in Southwestern Colorado, like I say, any one year, probably 90 percent of the mine -- of Union Carbide's mines were operated by contractors.

And so in some of these records we looked at earlier, I went through, talked to Cameron -- particularly Cameron Mining Company operate -- you know, it said Utah Southern Oil, Yazzie 313. Utah Southern Oil never mined that mine. Cameron Mining Company mined it for them.

And this all came to light a few years ago. I felt real embarrassed about it. I've been always calling the people in these records the operator, and they're not.

MS. KANE: Can we go off the record for one second?

VIDEOGRAPHER: Certainly.

MS. KANE: Thank you.

VIDEOGRAPHER: Hold on one second. The time is approximately 4:50, and we are off the record.

(Off the record.)

VIDEOGRAPHER: The time is now -- before it was 3:50 and it's now 3:51. We're on the record.

Q (By Ms. Kane) Bill, if you can look at Exhibit 94-41.

A Okay.

Q Okay. It's right there. And just what is this?

A This is a visual that I made for a talk I gave at Mesa College, Mesa State College then, to the geology students about Ambrosia Lake, one of the largest uranium districts in the United States. And this is -- this is one of the visuals I made for a

PowerPoint. And it's really a brief chronology of Ambrosia Lake, the giant Ambrosia Lake mining district. And it's compiled from things I have written, things that the New Mexico Bureau of Mines have written, the state -- New Mexico Environmental Division. We have gotten all kinds of things we got from all over to do this.

And there's three pages of this. This is -- this goes from when Paddy Martinez, P-A-D-D-Y, Martinez found uranium on Haystack Butte on the railroad land and how that developed in a uranium boom at Grants, and mills were built by three companies. And then it continues over here with other things, how the district expanded to the east. And, anyway, the Mt. Taylor, big deep mines of Gulf Minerals.

Anyway, it's sort of a chronology, like I said, of what happened at Ambrosia Lake as the district grew and then when it started to shut down because of the economics and all that. And groundwater recovery. And it goes up until 2007, which it says Uranium Resources Incorporated planned to acquire the Rio Algom site, which we found fell through later.

Q And that's Page 43 that you are looking

at?

A Huh?

Q And that's Page 43 that you are looking at?

A Yeah. This chronology is on three pages which is three different slides in a PowerPoint presentation.

Q Okay. And you feel pretty comfortable that that's an accurate summary?

A Oh, yeah. And this is off the subject, but right now, currently, Virginia McLemore and I are writing a summary of uranium mining in New Mexico. And I'm writing all about the Carrizos and Sanostee and things I knew about before she was practically born, and she's writing what's happening up -- now with the mergers and Strathmore being involved and all that. And this is going to be published in a New Mexico Geological Society book next year, so that's what I'm doing now.

And she's looked this over and says this is a good -- I think I end -- I end my thing up here with Bokum drilling, and she's updating this and she says this is -- she has no problems with this, because BHP -- BHP Billiton now has the old Kerr-McGee site down there.

Q Okay. All right.

MS. KANE: Thank you, Bill. That's all the questions I have. Let's go off the record again.

VIDEOGRAPHER: The time is approximately 3:54, and we're off the record.

(Recess taken.)

(Exhibit 127 was marked, and Navajo Nation Exhibits 1 and 2 were marked.)

VIDEOGRAPHER: The time is approximately 4:07, and we're on the record.

EXAMINATION

BY MR. TAYLOR:

Q Good afternoon, Bill. How are you?

A Good. Holding up.

Q Good. My name, as you know, is David Taylor. I'm going to be asking you some questions on behalf of the Navajo Nation. I'm an attorney with the Navajo Nation Department of Justice.

A The Department of Justice.

Q The Navajo Nation Department of Justice.

A Oh, I thought --

Q You don't want to get that confused.

A Okay.

Q The Navajo Nation Department of Justice,

yes, sir. And on behalf of the Navajo Nation Department of Justice, I just want to very quickly thank you again for being here, and I want to thank you for this wonderful repository of records that you have kept, too, that are extremely valuable and important to the Navajo Nation.

Bill, I have handed you two documents that -- oh, before I do that, I want to make reference, at Chris' request, that we have labeled -- the map that we have just been referring to back here that's behind you, we have labeled that as Exhibit 127.

Now, I have handed you two documents and you have them there in front of you, and I believe that everyone in the room, hopefully, has a copy of these. And you will see that one is marked as -- I have marked one as Navajo Nation Exhibit 1, and that is the list. And I will represent to you that this is a document that was provided to me very recently by the -- by the U.S. Environmental Protection Agency, Region 9. And this document was prepared by Region 9 in conjunction with the Navajo Environmental Protection Agency for purposes of describing what we have determined to be the 43 high priority cleanup sites on the Navajo Nation for the

next five-year plan that's coming. So that's what this is.

A Okay.

Q Now, the second document, I will represent to you, which is labeled Navajo Nation Exhibit No. 2, is a map that was also prepared by the U.S. EPA, and it gives the locations, as you can see, for those 43 high priority sites. So what I want you to do --

A These are the ones marked in red on the map?

Q That is correct.

A What are the ones marked in gray?

Q Those are lower -- do you see they have got it here listed. Those are AUM claims, it looks like, according to the legend of the document, but we're going to focus today on the red dots, okay?

A Okay.

Q And what I want you to do is feel free to look back and forth between these documents as I ask you questions about the ones on Exhibit 1 and the ones on Exhibit 2.

Let's just start down -- and my questions on these documents are really going to be focused on some of the things you have already testified about.

I'm going to focus on your visits to these sites, I'm going to focus on roads that may have been constructed by AEC around these sites, and I'm going to focus upon ore-buying stations that may have served these sites.

A Okay.

Q And so let's just start out with -- the first one on here is Occurrence B. Tell me, have you ever visited Occurrence B?

A Yes, I have. It's a site near the little village of Del Muerto, D-E-L, capital M-U-E-R-T-O, near Chinle, Arizona. It's an occurrence in the Shinarump right near Canyon de Chelly National Monument. And it is -- I have described it in my report on Zhealy Tso's occurrences in Apache County. He was a Navajo judge that staked some claims.

Q How about many times -- do you recall how many times you were out at Occurrence B? How many times --

A Probably once.

Q Probably once. Were you there by yourself?

A Yeah.

Q Okay. So there's -- you never saw a Navajo official on Occurrence B?

A No.
Q Or another federal official.
Is there -- was Occurrence B served by any ore-buying station --
A No. It never produced any ore.
Q Oh.
A It was just a radioactive anomaly near some hogans.
Q To your knowledge, there was no mining on Occurrence B?
A It was not reported.
Q Okay.
A That's in my document, because Zhealy Tso said somebody stole ore off his claims and we could never find a record of it.
Q All right.
A But I did find a stockpile of low-grade ore that he didn't know about, but anyway...
Q So you don't know anything about where the stockpile of ore came from?
A Yeah, it came out of a rim-stripped area on -- the de Chelly. He had several claims around there or several mines. He had three mining permits, as I remember, and Occurrence B was the lowest radioactivity of any of these.

Q Okay. So --
A -- investigation.
Q So the stockpile came from rim-stripping which was AEC activity, correct?
A No, no. It was -- it was -- Arizona Giant Uranium Company did this.
Q Okay.
A You should see that report because he kept pestering the AEC, Who stole my ore? And we could never -- said, There wasn't any ore ever stolen. I wrote that report for the Arizona Geological Survey as -- mainly because he was even pestering them for records.
Q Where is that report?
A I have a cop -- I should have a copy in my file. I don't think Craig has a copy. Anyway, it's in the -- I should have a copy in my library, but you didn't copy it, so I don't know. But it is -- it is an open-filed report by Arizona Geological Survey.
Q All right. And you have a copy and the State of Arizona has a copy --
A Yeah, they have one -- they have one down in Tucson.
Q Okay. Do you remember anything about else

about -- other than what you've testified to --
A No. It was a comedy of errors because here's a Navajo judge accusing the government of stealing his ore.
Q Do you remember the name of the Navajo judge?
A Huh?
Q The name of the Navajo judge.
A It's Zhealy Tso, Z-H-E-A-L-Y, T-S-O.
Q To your knowledge, is he still alive?
A I don't know. That's a common name.
Q Right. Anything else -- we're off to a slow start. That's not your fault.
A That's the top of your list there, unless -- unless Occurrence B is -- unless Occurrence B is including Zhealy Tso's messed up -- the area messed up over in A. This was the lowest -- if I remember right, this was the lowest radioactivity on his so-called mining permits there.
Q Do you recall anything else about the Occurrence B site?
A No. I'd have to read the report. I wrote this way back in 19 -- let's see. He claimed the ore was mined in about 1954, something, and I went out there in probably '59 and looked at it and then

wrote the report probably in -- sometime, sometime later. After people in Arizona says, Give us some dope on that Zhealy Tso business.

Q Very good. Let's move on to the next site. Mariano --

A Do you want me to -- it's only a short report. Do you want me to send you a copy?

Q I would greatly --

A Give me your card and I'll do that for you.

Q Thank you very much.

Let's go on to Mariano Lake. Now, are you familiar with the Mariano Lake site?

A Yes.

Q Have you been on than site?

A No, I've driven by it.

Q Okay. So are you familiar with any ore-buying stations that would have been served on that site?

A I don't -- I don't know where it shipped its ore; probably either to Homestake or Kerr-McGee. It produced late in the game. It shipped its ore to the Ambrosia Lake area and I couldn't tell you which mill.

Q Are you familiar with --

(Interruption in proceedings.)

Q (By Mr. Taylor) Are you familiar with any roads that have been -- would have been --

A No.

Q -- built in that area? All right.

Anything else that you can recall about -- for purposes of this testimony about the Mariano Lake site?

A No.

Q I'm going to skip the Northeast Church Rock site and the Quivira sites for this -- for the moment here and perhaps go back to them.

Let's go to Eunice Becenti. You've testified that you are familiar with the Eunice Becenti site?

A Yeah. It's recorded in that report I was showing Kate this morning. It's on the Gallup Hogback north of the Diamond Tomb mine near Rehoboth. It's an open pit on the Gallup Hogback there, and the ore was in the Dakota sandstone, which is an unusual occurrence.

Q You visited that site?

A Oh, yeah.

Q How many times --

A Once.

Q Were you there by yourself?
A Yeah.
Q Are you familiar -- did that site -- was that site, to your knowledge, served by an ore-buying station?
A It could have shipped up to the Kerr-McGee mill in Shiprock because a lot of those mines in the Gallup area, somehow they always went up 666 to Shiprock rather than go to the Grants area.
Q To your knowledge, were there any roads built around that site that you know?
A There was probably a little access road off the main road there, but I don't remember that.
Q All right.
A But the company -- the Hyde -- I think Mr. Hyde and Mr. Tucker mined that after looking at that document I have. They probably built the road. AEC didn't build any roads over there.
Q Okay. Let's just -- let me generally ask you: Are there general areas where AEC built roads and some areas where they --
A No. The roads were mainly access roads into areas. Like they built the road -- they improved the county road from Blue Water up into the Haystack Butte area because that was their early

discoveries around Grants, and the mill was at Blue Water. And they improved the road from Shiprock over to Dennehotso -- no, to Mexican Water, and up over Comb Ridge into the Cane Valley.

And let's see, what else did they -- and they improved the road from Laguna Pueblo up to the newly discovered Jackpile Mine. And these were really access roads to get ore out. They didn't really build any roads around mines in Arizona or New Mexico. Now, in Colorado, they improved old stock trails and thing all over that went up to mining districts, but not to individuals mines that I know about, but...

Q Generally speaking, once the roads were built, did they also maintain the roads?

A I think -- like I'm talking about the Shiprock-Mexican Water-Comb Ridge road, I think there was maintenance done on that afterwards, maybe by the BIA. I'm not sure. But you would have to look at that report I wrote on Arizona roads where I got good data out of the files and I can't remember the details, but it seems like some of that construction was also shared with the BIA. I'm not sure. Bureau of Indian Affairs.

Q And that leads me to a tangent that I was

going to ask you, which is: You identified where the Arizona section of that report is. Have you seen the New Mexico section?

A No.

Q Do you -- so you don't know where that could be found?

A It wasn't in the archives or in the AEC data they're getting ready to send to the National Archives. There was only Arizona and I think part of Colorado, but there weren't any complete reports. But I -- there was a map down there showing generally where AEC improved roads, and that's how I knew the road from Laguna Pueblo up to the Jackpile Mine was improved and the road from Blue Water into the Haystack Butte area was improved, because it's on this map.

Q Do you know who improved those roads?

A The AEC did.

Q All right.

A That's part of the AEC access -- according to this map.

Q And when you say "improved," do you mean paved them?

A I don't know what -- I don't know the detail. I know the ones in Arizona were not paved.

They were just bladed and knocked the rocks out of the road.

Q That reminds me of another thing that you testified about, and I think you testified that there was roadwork between Kayenta and Monument Valley, I think. Do you remember talking about that? Where was that?

A Shiprock.

Q Shiprock.

A Shiprock to Mexican Water and then over Comb Ridge into Cane Valley, and then I think they improved the road from Cane Valley up through Mexican -- up to the Mexican Hat bridge or Mexican Hat. I think that was done in -- but that was in Utah, see, so I don't have data on that. But I read someplace or heard someplace they improved the road up to -- up to the Mexican Hat bridge.

Q And would those have been dirt roads?

A Yeah, that was all dirt roads.

Q All right.

A Now it's all basically paved except into Cane Valley.

Q All right. Thank you.

Now, let's get back to the list, to the Mac No. 1 Mine. Are you familiar with that mine?

A Yeah. I was down there a couple times just with some visitors just to look around.

Q And that is in the Eastern Agency, correct?

A Yeah. And also down to -- no, no, I'm wrong. I have been by the Mac. I was down at the Blackjack No. 2, which is an older mine than the Mac. Mac is more of a younger mine down there. I was never down at the Mac, but I have been by it.

Q Okay. Mac and Blackjack 2 are pretty close to each other.

A Yeah, right. The Mac orebody was found as a trend off the Blackjack 2 Mine by Homestake or somebody.

Q So are you familiar with any roads that were built in that area?

A I know there -- there's a road that goes across from Smith Lake over to Pinedale, and the road down -- Lance Corporation might have built a road off that up to the Blackjack 2. You know these roads.

Q But I don't know who built them. That's why --

A AEC did. I imagine Blackjack -- Lance Corporation that has the Blackjack did that.

Q Were there ore-buying stations in this area?

A No. That ore was all shipped -- it was all -- I know that for a fact because the Lance Corporation had a deal with Homestake, and that ore went to the Homestake mill out of the Blackjack Mine.

Q Have you -- you visited Blackjack, then. Now, you know there's two Blackjack --

A Yeah, I've been down to both of them.

Q You've been to both of them.

A The Blackjack 1 is the big mine. Blackjack 2 is the smaller mine.

Q And how many times did you visit Blackjack 2?

A I've been there probably at Blackjack 1 three times and maybe 2 only once.

Q Were you by yourself or --

A No. I was with a group of guys. They wanted to see -- Lance Corporation was giving us a visit to show us what they were doing or something.

Q Who was Lance Corporation?

A They were the original owners of that. They owned it. Bokum, if you know where...

Q And who was the group of people that you

were with out there?

A First time I went down to Blackjack No. 1 was a bunch of visitors. I don't know -- foreign visitors. Maybe Canadians or -- we always had Canadian visitors and Australian visitors and French visitors, and we had to tour them around.

Q All right. But you were not with any Navajo officials?

A Oh, no.

Q And as I go down this list, if I forget, I'm going to trust your memory to tell me if you were ever with Navajo people on any of these sites.

A No. Let's see. The only mine that I see here that I was infrequently with Navajos was the Black Rock Point No. 3 Mine. That was Thomas Clani, C-L-A-I -- C-L-A-N-I. That was his mine on a mining permit, and he always -- and it was right near the AEC camp. So he would always want to come over and show us what he was doing in his mine. I've been to the Black Rock 3 mine maybe a dozen times in a couple years.

Q Okay. So --

A All the mines above that I have been to, but only with -- Standing Rock, is that a mine or is that that radioactive area out there?

Q Oh, I see Standing Rock. I have been not been to Standing Rock.

A I think that's that thorium occurrence on that little mesa over there that's radioactive, pretty radioactive from the thorium in it.

Q Okay. But just for the record here, you can't recall meeting with any Navajo --

A No.

Q -- officials on any --

A All --

Q -- of these mines.

A I've been out with Perry Charlie, my friend Perry, but that's up in the Carrizo Mountain area.

Q Right.

A But -- and I don't see -- let's see. Haystack -- Ruby Mines are after I left Grants area. Haystack 1 is the original discovery at Grants on the railroad land. I've been there many times but with no Navajos because that's railroad land, but they use Navajo miners, I know.

Then looking down here at the -- at the two allotments: Desidero and Vandever, V-A-N-D-E-V-E-R, and Desidero is D-E-S-I-D-E-R-O, those are Navajo allotments in the Haystack Butte

area. I've never been with Navajos. I looked down that list. The only thing I can see that I have been with and know anything about, Navajo being -- was with Thomas Clani there at Black Rock Point Mine, only because the AEC camp was only a half a mile away.

Q Okay. There was an AEC camp close --

A The AEC Rattlesnake drilling camp was right very close to his Black -- about half a mile away from his Black Rock Point No. 3 Mine. But like -- I have been to all these other mines. The two allotted -- Standing Rock must be that thorium anomaly there. Black sand -- it's black sand full of thorium and not uranium.

Q I just want to try to close the loop on my questions about --

A Okay.

Q -- Navajo officials.

And Thomas Clani, to your knowledge, was not a Navajo government --

A Oh, yeah.

Q -- official. He was a Navajo government official?

A No, no. He was -- he was a well-educated Navajo that was chapter president one time and spoke

pretty good English and was wanting the AEC to do more drilling on his property.

Q I understand, but to your knowledge, looking at this list, you never saw a Navajo official --

A Not Navajo --

Q -- kind --

A Now, Perry Charlie -- no, he was working for AML.

Q Right.

A I was out with him at -- let's see -- Plot 3 down here and King Tutt Point. I have been here with him -- out with him. And Oak -- I might have been there with the Oak 24 and 25 with him. But he was -- he was just an abandoned land...

Q Anyone beside -- and so Perry Charlie was not with the Navajo Mining Division.

A No, he was with the abandoned mine land people.

Q And so he was inspecting for reclamation purposes, correct?

A He was -- he was showing myself and Peter Eichstadt around.

Q Peter Eichstadt?

A I can't spell his name.

Q Peter, E-I-C-H-S-T-A-D-T, is that who you're talking about?

A Yeah.

Q Who wrote the book "If You Poison Us."

A Yeah, that's the author.

Q Right. So Perry was showing Peter and you around.

A Around the Oak Springs/King Tutt Mesa area.

Q All right. Any other Navajo officials that you think you were with at any time on any of these sites?

A One time over at Oak Springs I got stopped by a Navajo policeman, and I show him my permit and that permit that the New Mexico Bureau of Mines had was for paleontology research. And he looked at it and said, Okay, because we did not have -- at that time, we didn't have a legal permit to look at uranium, but we could collect fossils.

Q Who granted the legal permits to look at uranium, as far as --

A Somebody there in Window Rock sent it over to Socorro, and I was at Socorro -- Socorro, New Mexico -- and Virginia McLemore and I, we were -- we were going around making notes on abandoned mines

when the Navajo policeman stopped us. This was in the mid-'80s.

Q Okay.

MR. TAYLOR: Why don't we take a quick break to change the tape now. We're going to change the tape.

VIDEOGRAPHER: The time is approximately 3:31, and this is the end of Tape No. 11 in the deposition of -- boy, I can't tell time today. 4:31. Excuse me. This is the end of Tape No. 11, and we're going off the record to change tapes.

(Off the record.)

VIDEOGRAPHER: We're on the record. The time is approximately 4:34, and this is the beginning of Tape No. 12 in the deposition of Mr. William Chenoweth, and we're on the record.

Q (By Mr. Taylor) All right. Thank you, Bill. We're back on the record, and I want to move on to the list, Exhibit 1, Ruby No. 3 Mine.

A I've never even been to -- that developed after I long left the Grants area. When I did get back to Grants, that's over at Smith Lake, so I never got to that area. I don't even -- got ever close to that.

Q Let's move on to Haystack No. 1, then. Have you ever been to the Haystack No. 1 --

A Many times, because that was the original discovery that set off the uranium boom at Grants. When Paddy Martinez found yellow rock out there and took them into town, and the businessmen got the newspaper involved and that started the boom.

Q When you say "many times," approximately how many times have you been to that site?

A Oh, when I was in -- this was probably when I was a student there at Grants. I mean I -- I probably have been out there three times, maybe.

Q All right. How many times in your capacity as working with the Atomic Energy Commission have you been out there?

A That would be that.

Q That three --

A Because I was a Walker-Lybarger contractor employee, because he discovered that, I think, in '51, and I was working for them in '52 and '53. So, anyway, everybody had to go out and see the original discovery.

Q What do you recall about those visits?

A It's a series of open pits, small open pits, on the rim and they were mined by Santa Fe and

their contractors.

Q And do you recall who was with you or accompanied you on --

A Oh, some of the AEC -- probably some of the AEC geologists and there might even have been -- I can't remember. There were Navajo miners there, I know.

Q Navajo miners, federal employees. Any representatives of the Navajo --

A No. That was allotted land. You couldn't get Window Rock people over there.

Q All right. Do you remember any -- any ore stations, buying stations?

A They sent their ore to the Anaconda Mill.

Q And that is located?

A Blue Water, New Mexico, down the AEC improved road.

Q The AEC improved --

A They improved it from Blue Water up into the Haystack Butte area.

THE REPORTER: I'm missing your questions. I'm missing the end of them, I'm missing the middle of them. There's just going to be half of them on the record.

MR. TAYLOR: I will do my best to

slow down.

Q (By Mr. Taylor) So backing up, Bill, the question was: Did AEC construct the road --

A They improved the county road.

Q -- to the Anaconda Mill?

A From Blue Water, yeah. From the highway, Highway 66, down at Blue Water, which was just a stone's throw from the mill, up through into the Haystack Butte/Poison Canyon area.

Q Do you recall anything else about Haystack No. 1?

A No. They mined for many years. They didn't mine a lot of ore for a month, but they mined it for many years.

Q Let's move to -- and I'll do these two together, because I think they're close: Section 25 and Section 23.

A Well, I think that 25 refers to Santa Fe's 25 over by Poison Canyon, and Section 23 refers to a railroad section over by Haystack Butte. I think they are maybe six miles apart.

Q Would you look at the Exhibit 2, please.

A Uh-huh.

Q And down in the right-hand corner, do you see Section 23?

A Oh, yeah. I see section -- oh, that 23. Okay. There's so many -- you're right. 23 is a railroad section and 25 is a railroad section over by Poison Canyon. You're right.

Q And that would be around Casamero Lake?

A No. It's between Haystack -- it's east of Haystack Butte near the Poison Canyon area.

Q Have you visited both of those sites?

A Oh, yeah. Section 25 had -- besides open pits, it had an underground mine decline on it, and 23 was just a series of little open pits.

Q Approximately how many times have you been there?

A Twice, maybe.

Q Do you recall anything about those visits?

A No, just they were limestone -- they were pits and mines in the limestone, and I know, looking at the production records, 25 produced many years and had many contractors in there working on the railroad land. My neighbor, Tom Fife, mined there for a long time.

Q Were you ever there with federal -- other federal officials?

A No, just some of the AEC people.

Q Some AEC people?

A Yeah.

Q Okay. Were you ever there visiting with any Navajo officials?

A No.

Q All right. Were there any roads built in that area that you know of?

A They probably shipped their ore down to Anaconda because it was -- it was limestone ore, high carbonate, so they had to use the alkaline leach circuit. And then later, Homestake had an alkaline leach circuit, so the later production could have gone to Homestake.

Q And that's the Anaconda mill --

A At Blue Water.

Q -- at Blue Water that had the AEC-built access --

A Yeah, they improved the road from Blue Water up into this area.

Q Okay. And then it's so close to a mill, I assume there was no ore-buying station there.

A No, no. The ore-buying stations that were put in at Milan, New Mexico on the railroad -- that's M-I-L-A-N -- was only built after the big discoveries at Ambrosia Lake were found and before the big -- before the big mills were built. I can't

tell you the date.

Q So what mines would have been serviced, because Milan is right there by Grants, right?

A Yeah.

Q What mines in the area would have been serviced by that?

A The early mines. The Dysart, D-Y-S-A-R-T, Mine and probably Kerr-McGee, Section 22, and also I remember that they got ore from southern New Mexico down in Sierra County, they got ore from Santa Fe County, and they even got ore from Oklahoma. They found a hot spot over in Oklahoma and they trucked the ore all the way down to Milan to the ore-buying station, and that was a big deal, I know.

Q Okay. Let's move on to the Standing Rock Mine. Are you familiar with --

A I think that is that little mesa out by Standing Rock Trading Post that has that radioactivity cause by thorium on it, and I looked at that one time, if that's what it is.

Q Well, take a look at the map, Exhibit 2, if you would, please, and --

A Oh, it's way north. Let's see, where is that? Well, that can't be. I don't know anything about it. It's too far north because the one I'm

thinking of is near Mariano Lake.

Q Okay. So you have never visited, to your knowledge, the Standing Rock that's shown.

A No. I would have to look at the Navajo atlas to see where it is because I'm not familiar with that.

Q Okay. Let's move on to Section 26. Have you -- are you familiar with Section 26?

A 26 and 24 should be real close together. Yeah, they are.

Q You --

A They're Navajo allotments near Haystack Butte that were mined by open pits.

Q And have you visited both of those?

A Yeah. You can't -- when you go to Haystack Butte, you have got mines in practically every section around there, and so you can't miss them.

Q When you visited those, were you by yourself?

A Probably with somebody else.

Q And who would that have been?

A Oh, AEC geologists, because these early mines were booming there in the early '50s when I was living in Grants.

Q Did you ever see any Navajo --
A No.
Q -- official out there? Okay.
Let's move on to Rock Door No. 1. Do you know where that is?
A Yes, that's in Monument Valley behind Gordon's Trading Post.
Q Pretty close to Skyline.
A Yeah, I have never been there, but I have seen it from the air, because it's hard to get to they tell me.
Q Do you -- but you are familiar --
A Oh, yeah.
Q To your knowledge, was -- were there roads built in that area by AEC?
A What I remember about Skyline -- I mean the Rock Door Mine is they had a cable. It went from the mine down to the valley floor, and the ore was put into canvas bags and went down that way, because it was so -- there was really no -- and the miners, I guess, climbed up the hill to it. It only produced a small amount of ore because it was so remote into that mesa.
Q About how far is it from Skyline Mine?
A Quarter mile.

Q Would it have been served by any ore-buying station?

A No. It probably shipped its ore to...

Q Mexican Hat?

A Mexican Hat, it was mined in the early days. I would say it shipped its ore maybe up to Monticello, because that would be -- in the early days, that was the only ore-buying station in that part of the country. You would have to look at the dates of the shipment to get a better idea, because Mexican Hat wasn't built, I don't think, when Skyline was built -- I mean when Rock Door was.

Q The next mine on the list is Charles Keith. Are you familiar with that one?

A I have flown over that in a plane, when we had an airplane flying around taking pictures. I have flown over Charles Keith. It's on the west end of Oljeto Mesa, O-L-J-E-T-O, and I have never been there. It's a small mine there, but a big mine up over the cliff.

Q And Oljeto Mesa, you are talking about in Utah, right?

A Yeah, yeah. Charles Keith is in Utah, as is Rock Door.

Q Okay. That seems like a pretty remote

area.

A Yeah.

Q Were there any roads that were access roads built out there, to your knowledge?

A Huh-uh.

Q Was there an ore-buying station in that particular area, to your knowledge?

A No. I think Charles Keith probably went to Monticello because it was mined in the '50s, maybe. I would have to look at my report on Utah and see, but it didn't produce a lot of ore, but it was -- I don't even know how they got the ore down off of Oljeto Mesa because it's way up there, a cliff above the trading post.

Q Now, did you say you've just flown over that. You've never visited it.

A No, I've never been -- I flew over it -- when I was in that Navajo lawsuit, I flew over there with a couple of DOJ lawyers back in 1980.

Q Do you have any other recollection about that mine?

A It's hard to get to.

Q The next mine on the list is Harvey Blackwater No. 3.

A Yeah. I have been there by myself, I

think. That's north of Monument Valley on Comb Ridge, by myself. I think the company that mined there probably built the road down to the main road in Cane Valley or someplace.

Q And just to be clear, every one of these that you visited where you were by yourself or with somebody, I assume --

A I think I have been to all of them eventually.

Q Okay. But --

A The only one I don't know is Standing Rock, and those NAs are anomalies someplace. I don't know where they are, but I have been to all the rest of them, and the Oak -- the Oak 24 and 25 I don't know.

Q You were there in your capacity working for AEC, correct?

A When I was at Harvey Blackwater?

Q The one we were just talking -- yes, Harvey Blackwater.

A No. I think I was -- who was I there with? Maybe I was with somebody -- I was probably with AEC then.

Q Okay. Anything else you can tell me about Harvey Blackwater?

A No, it's a small mine.

Q Skyline Mine we're going to skip over, unless you want to tell me something about Skyline Mine.

A I have been there -- I have been there with some DOJ lawyers on a scary ride out to the end of the mesa. This is that lawsuit in 1980. I was there with two -- two DOJ lawyers and then a consultant out of Golden, Colorado they hired. And it was a scary road out on that mesa there where I didn't even want to ride in that Jeep.

Q I have been on it. It's scary.

Let's go to Mitten No. 3.

A I was there at the same time. It's just down a little farther west on Oljeto Mesa.

Q Okay. And you have been there how many times?

A Once.

Q By yourself?

A No. With these DOJ lawyers, because that was one of the properties involved in a lawsuit because it mined -- no, Skyline mined uranium-vanadium ore back in the early days, and we were up there driving around and we went by the old Mitten 3 Mine up there.

Q Were you there with any Navajo officials?
A No.
Q The next mine on the list is Firelight No. 6. Are you familiar with that mine?
A Yes. I have been by that site, but it was a decline. It went down in, and it's all been reclaimed. When I went by it in the -- oh, it was being re -- about 1980, I think it was, by myself.
Q Where is Firelight Mine?
A It's in Monument Valley real close to the highway. It's north of Kayenta and south of Mexican Hat, but it's south of the road where you turn off that highway -- I can't remember the number -- to go to Oljeto. It's south of there maybe three miles and to the west maybe a half a mile.
Q Were any roads built by AEC --
A No.
Q -- in that area?
A I think Climax Uranium built the road in, the access road in there, and that ore, I'm pretty sure, went to Mexican Hat because it was a late mine.
Q So no ore-buying stations --
A No.
Q -- that you know of in that area?

And you visit -- you visited there once?

A No. Went by it once and it was being reclaimed.

Q Okay.

A I went in there to see it because of that report I was writing for Utah.

Q Anything else you can tell me about Firelight?

A Huh-uh. But Climax Uranium was one of the joint ventures on that, and they gave -- somehow they gave me a -- somehow I got a copy of the mine map to write this report for Arizona, so I have got a report on the Firelight in one of my Arizona reports.

Q Who else were the joint venturers there?

A They were a joint -- Climax was in a joint venture with Bayshore Mining Company of San Francisco, I think, something like that. But they hired a contractor out of Grand Junction called E.E. Lewis to mine it.

Q And you never saw any Navajo officials out there?

A No.

Q All right. The next mine on the list is Alongo Mines. Do you know where that is?

A That's in the East Carrizos southeast of King Tutt Mesa. I was there once with Oren Anderson of New Mexico Bureau of Mines, and we were trying to survey where it was exactly because it wasn't on any map. So I was there once and that would have been about 1985 or something.

Q Did you visit it by yourself?

A Yeah. No, I was with Oren Ander -- Oren Anderson of the New Mexico Bureau of Mines.

Q So a New Mexico state official?

A Yeah. It's -- it's in New Mexico, just over the state line that's south of King Tutt Mesa.

Q And was that the only time you visited there?

A Huh?

Q Was that the only time --

A Only time. Kind of hard to get to.

Q Okay. And so there were no Navajo officials involved in that.

Any roads built in that area that you know of?

A Yeah, there was a trail went into it, but I don't -- I don't know who built it.

Q Okay.

A Came up from Red Wash and went around,

but...

Q Let -- let me do kind of a catch-all question, taking kind of a break from going right down the list.

Was there rim -- did rim-stripping -- what you have testified to earlier, did that occur in the Eastern Agency at all?

A In what?

Q In the Eastern Agency, to your knowledge.

A No, not -- AEC didn't do any over there, and I don't remember any of the mines that were really rim-stripped. They mostly -- they gopher-holed into it. Alongo had two little adits and they went in and mined a little cloud of ore. That's all. It's in the report -- one of the reports we saw yesterday or something.

Q All right. So the rim-stripping mostly that you remember was in the Western Agency?

A Well, the AEC rim-stripping -- as I remember on the reservation, there was rim-stripping at Cameron, there was rim-stripping at Black Mountain, you know, up in the Tsasie school area. We rim-stripped about 15 anomalies up there.

Q I'm sorry. Where is the Tsasie school area?

A You're coming out -- before -- you're coming out of Chinle, you're going toward Piñon, and then you turn off and go up -- Black Mountain Trading Post.

Q North of Piñon?

A No. It's this side of Piñon.

Q Oh.

A Anyway, there was quite a bit of uranium mined there. And when it was found -- an AEC prospector, Harry James, found that, and they started looking around and they found all kinds of surface anomalies, so they sent the bulldozer in there to scrape them off. And I saw it after it was scraped off. And there was that, and then there was rim-stripping over on the Tom Wilson property near Rough Rock, and then there was rim-stripping at Sanostee. And that's the only AEC rim-stripping I know of on the res, done by AEC.

Q All right. Anything else that you can remember -- and how many times, again, did you visit Alongo Mines?

A One time.

Q One time. And anything else you can tell me --

A No.

Q -- about that visit? Observations?
A Huh-uh.
Q Tsosie 1, are you familiar with that?
A That's in the Saytah Wash, S-A-Y-T-A-H, Wash area of the Northwest Carrizo Mountains. It's a little mine on the rim of Saytah Canyon. And I forget when we did -- an AEC engineer and I were in that area, and we made a map of it because -- I forget. And it's in one of my documents that I wrote for Arizona again. But I think -- as I remember, it was -- it had a drill hole and they went in 100 feet and mined a little bit of ore and didn't make any money or something, but...
Q Bill, I'm familiar with a Saytah that is spelled T-S-E-T --
A Oh, that's -- that's the USGS spelling on the map. I'm doing the phonetic word that the VCA uses.
Q Okay. All right. So they are the same place?
A Yeah.
Q Okay.
A It's that big range that comes down out of the Carrizos by Black Rock Point and flows north into the San Juan River.

Q And it's a place where AML has a reclamation project? Are you familiar with that?

A No. But I know there's lots of mines. The Saytah Wash and the canyons have got lots of little mines dotted all over them, mostly operated by VCA. And I know they are working on that.

Q Okay. And how many times were you at Tsosie 1?

A One.

Q By yourself?

A No. An engineer named Ray Holmquist was with me. H-O-L-M-Q-U-I-S-T.

Q And who is Mr. Holmquist?

A Huh?

Q Who is Mr. Holmquist?

A He was an AEC engineer. We were out there recording some of these old mine sites before they got filled in.

THE REPORTER: My hands are -- they're not going to work anymore.

MR. TAYLOR: Okay. We can take a break. We can take a break or call it a day.

THE REPORTER: I have to call it a day.

MR. TAYLOR: Okay.

VIDEOGRAPHER: The time is approximately 4:56, and this is the end of Tape No. 12 in the deposition of Mr. William Chenoweth. We are going off the record.

(Proceedings adjourned at 4:56 p.m.)

I, WILLIAM L. CHENOWETH, do hereby certify that I have read the foregoing transcript and that the same and accompanying amendment sheets, if any, constitute a true and complete record of my testimony.

_____

Signature of Deponent

( ) No amendments

( ) Amendments attached

Acknowledged before me this _____ day of _____, 2014.

Notary Public: _____

My commission expires _____

Seal:

CFF

STATE OF COLORADO)
)ss. REPORTER'S CERTIFICATE
COUNTY OF MESA)

I, Candice F. Flowers, do hereby certify that I am a Certified Shorthand Reporter and Notary Public within the State of Colorado; that previous to the commencement of the examination, the deponent was duly sworn to testify to the truth.

I further certify that this deposition was taken in shorthand by me at the time and place herein set forth, that it was thereafter reduced to typewritten form, and that the foregoing constitutes a true and correct transcript.

I further certify that I am not related to, employed by, nor counsel for any of the parties or attorneys herein, nor otherwise interested in the result of the within action.

In witness whereof, I have affixed my signature this 30th day of January, 2014.

My commission expires February 14, 2016.

_____

Candice F. Flowers, CSR
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